FLIGHT TEST SERIES 3

Flight Test Report

Mike Marston, NASA AFRC Operations Engineer
Daniel Sternberg, NASA AFRC Operations Engineer
Steffi Valkov, NASA AFRC Operations Engineer

NASA Armstrong Flight Research Center
UAS-NAS IT&E Subproject

October 2015

RELEASE:
REVISION B

Overview

This document is a flight test report from the Operational perspective for Flight Test Series 3, a subpart of the Unmanned Aircraft System (UAS) Integration in the National Airspace System (NAS) project. Flight Test Series 3 testing began on June 15, 2015, and concluded on August 12, 2015.

Participants included NASA Ames Research Center, NASA Armstrong Flight Research Center, NASA Glenn Research Center, NASA Langley Research center, General Atomics Aeronautical Systems, Inc., and Honeywell.

Key stakeholders analyzed their System Under Test (SUT) in two distinct Configurations. Configuration 1, known as Pairwise Encounters, was subdivided into two parts: 1a, involving a low-speed UAS ownship and intruder(s), and 1b, involving a high-speed surrogate ownship and intruder. Configuration 2, known as Full Mission, involved a surrogate ownship, live intruder(s), and integrated virtual traffic.

Table 1 is a summary of flights for each Configuration, with data collection flights highlighted in green.

Section 2 and 3 of this report give an in-depth description of the Flight Test Period, Aircraft involved, Flight Crew, and Mission Team.

Overall, Flight Test 3 gathered excellent data for each SUT. We attribute this successful outcome in large part from the experience that was acquired from the ACAS Xu SS flight test flown in December 2014. Configuration 1 was a tremendous success, thanks to the training, member participation, integration/testing, and in-depth analysis of the flight points. Although Configuration 2 flights were cancelled after 3 data collection flights due to various problems, the lessons learned from this will help the UAS in the NAS project move forward successfully in future flight phases.

Table 1. Overview of Flights from Flight Test Series 3 for UAS in the NAS.

Configuration 1				
Flight	**Date**	**Hours**	**Encounters**	**Aircraft**
0	June 15, 2015	6.9	0	NASA 870
1	June 17, 2015	5.0	15	NASA 870, N3GC
2	June 18, 2015	4.9	23	NASA 870, N3GC
3	June 22, 2015	4.5	20	NASA 870, N3GC
4	June 24, 2015	4.7	20	NASA 870, N3GC
5	June 26, 2015	4.6	16	NASA 870, N3GC, NASA 865
6	July 7, 2015	4.8	22	NASA 870, N3GC
7	July 9, 2015	4.8	23	NASA 870, N3GC
8	July 10, 2015	4.6	20	NASA 870, N3GC, NASA 865
9	July 21, 2015	4.8	20	NASA 870, NASA 850, NASA 865
10	July 22, 2015	3.4	17	NASA 870, NASA 865
11	July 24, 2015	3.2	16	NASA 870, NASA 865
		56.2	**212**	

Configuration 2				
Flight	**Date**	**Hours**	**Encounters**	**Aircraft**
1	July 13, 2015	3.1	0	NASA 608
2	July 16, 2015	1.3	0	NASA 608
3	July 28, 2015	3.1	2	NASA 608, NASA 865
4	July 29, 2015	2.0	0	NASA 608
5	July 29, 2015	1.9	0	NASA 608
6	July 30, 2015	1.1	0	NASA 608
7	August 3, 2015	3.3	4	NASA 608, NASA 7, N3GC
8	August 4, 2015	2.8	0	NASA 608
9	August 4, 2015	2.9	2	NASA 608, N3GC
10	August 5, 2015	3.0	5	NASA 608, N3GC
11	August 6, 2015	1.1	0	NASA 608, NASA 865, N3GC
12	August 7, 2015	2.8	1	NASA 608, NASA 865, N3GC
13	August 10, 2015	2.8	8	NASA 608, NASA 865, N3GC
14	August 11, 2015	2.7	8	NASA 608, NASA 865, N3GC
15	August 12, 2015	2.5	8	NASA 608, NASA 865, N3GC
		36.35	**38**	

Table of Contents

List of Tables

List of Figures

1 Introduction

The desire and ability to fly Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) is of increasing urgency. The application of unmanned aircraft to perform national security, defense, scientific, and emergency management are driving the critical need for less restrictive access by UAS to the NAS. UAS represent a new capability that will provide a variety of services in the government (public) and commercial (civil) aviation sectors. The growth of this potential industry has not yet been realized due to the lack of a common understanding of what is required to safely operate UAS in the NAS.

NASA's UAS Integration into the NAS Project is conducting research in the areas of Separation Assurance/Sense and Avoid Interoperability, Human Systems Integration (HSI), and Communication to support reducing the barriers of UAS access to the NAS. This research is broken into two research themes namely, UAS Integration and Test Infrastructure. UAS Integration focuses on airspace integration procedures and performance standards to enable UAS integration in the air transportation system, covering Sense and Avoid (SAA) performance standards, command and control performance standards, and human systems integration. The focus of Test Infrastructure is to enable development and validation of airspace integration procedures and performance standards, including the integrated test and evaluation. In support of the integrated test and evaluation efforts, the Project will develop an adaptable, scalable, and schedulable relevant test environment capable of evaluating concepts and technologies for unmanned aircraft systems to safely operate in the NAS.

To accomplish this task, the Project will conduct a series of Human-in-the-Loop and Flight Test activities that integrate key concepts, technologies and/or procedures in a relevant air traffic environment. Each of the integrated events will build on the technical achievements, fidelity and complexity of the previous tests and technical simulations, resulting in research findings that support the development of regulations governing the access of UAS into the NAS.

1.1 Scope

The integrated Flight Test 3 (FT3) test period was divided into two distinct configurations. Configuration 1 test execution began on 15 June, completed 27 July and comprised 12 flights and more than 200 test points. Configuration 2 began concurrently on 16 July and was concluded early on 12 August. The Configuration 2 phase conducted three test sorties and numerous systems integration sorties but was unable to achieve the desired performance needed by the final authority and was therefore concluded early. Further details about each configuration are describe in the main body of this test report.

Per ITE-FT3-01 Section 5 *"Test Reporting"* this test report will include details on any deficiencies with either the system under test or the test equipment and methods as well as preliminary test results and analysis. This report may also be considered a general progress report to the Integrated Test and Evaluation (IT&E) sub-project.

1.2 Purpose

FT3 gathered data for UAS researchers for their development and evaluation of a Communication system, Sense and Avoid (referred to as Detect and Avoid (DAA) in the RTCA SC 228 ToR) algorithms and pilot displays for candidate UAS systems in a relevant environment. The technical goals of FT3 were to: 1) perform end to end traffic encounter test of pilot guidance generated by Self Separation algorithms (aircraft sensor to wind, Traffic Collision and Avoidance System (TCAS) II, and latency uncertainties to Ground Control Station (GCS) display); and 2) conduct flight test of prototype Communication system as part of an integrated DAA system; 3) collect data to inform the preliminary draft of the Minimum Operational Performance Standards (MOPS) for DAA and Command and Control (C2), to include display and human performance standards in both MOPS. Furthermore, FT3 increased the team’s capabilities and reduce the risks associated with building a pertinent flight test environment moving towards the final flight tests FT4 and Capstone.

The UAS-NAS project support and participation on the 2014 flight test of ACAS Xu and Self Separation (SS) significantly contributed to building up infrastructure and developing procedures for FT3. The FT3 experiment was divided into two distinct test configurations, each focusing on different aspects of the primary technical goals. The first (described as Pairwise Encounters) looked at the SS and Collision Avoidance algorithms to support the definition of well-clear and TCAS integration onto the ownship platform. The second (described as Full Mission, or FM, flights) focused on UAS pilot response times to, and acceptability of, the same SAA alerts, resolutions, and GCS displays under real world uncertainties.

The two test planned baseline configurations were conducted in two phases. The Pairwise Encounters (Configuration 1) were conducted at NASA Armstrong from 17 June until 27 July. NASA Armstrong provided the primary “ownship” test aircraft for this configuration. The Full Mission flights (Configuration 2), likewise conducted from NASA Armstrong, started integration efforts on 16 July and concluded on 12 August. NASA Glenn provided the primary “ownship” test aircraft for this configuration as well as the Communication system under test. The test period did not exceed original planned schedule estimates, even though Configuration 1 took longer than expected and the Configuration 2 was concluded early.

Testing facilities are Government owned, managed, leased, or under agreement and fall into two categories:

1. Development Facilities:
- Distributed System Research Laboratory (DSRL) at NASA Ames
- Flight Deck Display Research Laboratory (FDDRL) at NASA Ames
- Research Aircraft Integration Facility (RAIF) at NASA Armstrong
- UAS Sense and Avoid Research Lab at Stinger Gaffarian Technologies (SGT, outside of NASA Langley)

- Aircraft Operations Research Hangar at NASA GRC
- Communication Laboratory at NASA GRC
- GA-ASI Grey Butte Flight Test Facility
- GA-ASI System Integration Lab

2. Test Facilities:

- Crew Vehicle Simulation Research Facility (CVSRF) at NASA Ames
- DSRL at NASA Ames
- RAIF at NASA Armstrong
- Dryden Aeronautical Test Range (DATR) at NASA Armstrong
- Stand Alone Facility (SAF) at NASA Armstrong
- The Radio Frequency (RF) Communications facility at NASA Armstrong
- Edwards R-2508 Complex

1.3 Stakeholders, Participants, and Responsibilities

NASA Integrated Aviation Systems Program (IASP) provides direction for the UAS in the NAS project. The project office had the overall responsibility for FT3 flight test. NASA Ames, NASA Armstrong, NASA Glenn, NASA Langley, GA-ASI and Honeywell supported the project and were participants in the FT3 activity. The following is a brief description of responsibilities:

- **NASA Ames Research Center (ARC)**: NASA Ames provided the HSI research requirements for subject pilot evaluation based on performance during scenario events. Subject pilots performed scenario tests from the Research Ground Control Station (RGCS) located at NASA Armstrong. ARC also provided AutoResolver/Java Architecture for DAA Extensibility and Modeling (JADEM), one of the Self Separation algorithms used during Configuration 1.
- **NASA Armstrong Flight Research Center (AFRC)**: NASA Armstrong was the responsible test organization for all test missions flown from AFRC. AFRC provided the RGCS for subject pilot evaluation. Further, AFRC hosted the Live Virtual Constructive (LVC) infrastructure for data distribution between NASA Ames, Glenn, and Langley. AFRC also provided the live unmanned aircraft used as intruders for both configurations. NASA 870 (“Ikhana”) was the unmanned aircraft ownship platform for Configuration 1 encounters within the R-2515 airspace.
- **NASA Glenn Research Center (GRC)**: NASA Glenn was the participating test organization for all test missions flown with the NASA 608 T-34C. GRC provided the communication and control system interface and the UAS Surrogate ownship aircraft for use during Full Mission flights. Although initially planned, the NASA Glenn S-3B Viking aircraft was not available for use as a “high” speed ownship during Configuration 1 testing.
- **NASA Langley Research Center (LaRC)**: NASA Langley provided a Self-Separation algorithm (Stratway+) that was displayed and evaluated by subject pilots during flight encounters.

- **General Atomics Aeronautical Systems Inc. (GA-ASI)**: Provided hardware, software and integration support on the Ikhana UAS and specifically the Due Regard Radar (DRR). GA-ASI also provided pairwise encounter requirements for autonomous aircraft response maneuvers to TCAS alerting, as well as a Self-Separation Algorithm, CPDS (Conflict Prediction and Display System), for evaluation.
- **Honeywell**: Honeywell provided the software for the Surveillance Tracking Module (STM) prototype that contained the Honeywell Fusion Tracker. Honeywell also provided a second TCAS II equipped intruder aircraft (N3GC) in support of both configurations. N3GC had onboard TCAS recording capability, and that recorded data was made available to the rest of the FT3 test team to support their data analysis.

1.4 Operations Working Group

The Operations Working Group (OWG) was a collaborative meeting between all stakeholders and participants for FT3. The working group, which met weekly on Tuesdays and bi-weekly on Fridays prior to testing, discussed all FT3 ground and flight operations topics. The working group was responsible for flight planning and coordination, assigning actions items, safety concerns which would feed into the System Safety Working Groups (SSWG), hardware integration and testing discussion, training, and readiness. The OWG was new for FT3 and was responsible for a large part of the successes in FT3.

2 Flight Test Period

The flight test period spanned from 15 June 2015 to 12 August 2015. The flight days are detailed in Table 2.

Table 2. Flight Test Series 3 Flight Dates.

Flight	Flight Date	SUT	Types
Configuration 1			
0	15 June 2015	Ikhana	System check-out
1	17 June 2015	AutoResolver	Fly-throughs
2	18 June 2015	AutoResolver	Fly-throughs
3	22 June 2015	AutoResolver	Follow display
4	24 June 2015	CPDS	TCAS, Radar
5	26 June 2015	CPDS	Low-altitude, Multi-ship, TCAS sequential, TCAS
6	7 July 2015	Stratway+	Follow display
7	9 July 2015	Stratway+	Follow display
8	10 July 2015	Stratway+/CPDS	Follow display, Multi-ship / Radar
9	21 July 2015	Stratway+	High-speed intruder, Multi-ship
10	22 July 2015	AutoResolver	Fly-throughs
11	24 July 2015	CPDS	TCAS, Zig-Zag, Radar
Configuration 2			
GRC1	13 July 2015	CNPC	Characterization flight (GRC only)
CST1	16 July 2015	CNPC	Check-out
CST2	28 July 2015	CNPC	Check-out
GRC2	29 July 2015	INS	Check-out (GRC only)
CST3	29 July 2015	CNPC	Check-out
GRC3	30 July 2015	CNPC	Check-out (GRC only)
REH1	3 August 2015	CNPC	Full mission rehearsal
GRC4	4 August 2015	CNPC	Check-out (GRC only)
CST4	4 August 2015	CNPC	Check-out
CST5	5 August 2015	CNPC	Check-out
REH2	6 August 2015	RGCS/HSI	Cancelled – weather
REH3	7 August 2015	RGCS/HSI	Full mission rehearsal
1	10 August 2015	RGCS/HSI	Data collect 1
2	11 August 2015	RGCS/HSI	Data collect 2
3	12 August 2015	RGCS/HSI	Data collect 3

3 Flight Crew and Mission Team

NASA 870, known as Ikhana, served as the ownship for the Configuration 1 flight test series. NASA 608, the GRC T-34C, served as the ownship for the Configuration 2 flight test series. Flight test encounter setups included a single ownship vs. a single intruder or single ownship vs. multiple intruders. The intruder role was supported by multiple aircraft due to availability and crew rest considerations. The aircraft and flight crew required to complete the test series are identified in Table 3.

Table 3. Flight Test Series 3 Aircraft and Flight Crew.

Aircraft	Role	Position	Flight Crew
NASA 870 MQ-9 (Ikhana)	Config. 1 Ownship	NASA Pilots	Howe, Posada, Less
		Air National Guard Pilots	LtCol Reiss, Maj Deveroux, Hinton
		DET3	Maj Rhodes, Maj Baughman, SSgt Cade
		NASA Mission Director	Buoni, Howell, Valeri
N3GC C90 King Air	Config. 1/2 Intruder	Honeywell Pilots	Dubbury, McMahon, Walker
		Honeywell FTEs	Singh, Dougherty
NASA 865 T-34C	Config. 1/2 Intruder	NASA Pilots	Purifoy, Miller, Newton, Howe, Broce
NASA 850 F-18A	Config. 1 High-Speed Intruder	NASA Pilots	Larson
NASA 7 King Air	Config. 2 Intruder	NASA Pilots	Howe, Williams
NASA 608 T-34C	Config. 2 Surrogate Ownship	GRC Pilots	Demers, Micklewright
		GRC FTEs	Griner
RGCS	Config. 2 GCS	Air National Guard Pilots	LtCol Shaw, Maj Brooks
		Global Vigilance CTF	LtCol Allen

Along with the aircraft and flight crew assets, an operations mission control team was utilized to manage the overall test effort. The test conductor was responsible for overall mission success and the coordination of all test assets. The test director provided flight safety oversight and supported the test conductor by performing all back channel and engineering channel coordination. The test coordinator acted as the scribe and performed control room supporting tasks. The mission control team was located in the SAF for all test missions performed during FT3. Table 4 provides a listing of the mission team. Furthermore, engineering coordinators in the LVC, Ikhana GCS, and Ames virtual Air Traffic Control (ATC)/pilot coordination facility supported the operation.

Table 4. Mission Team.

Mission Team	
NASA Test Conductor	Marston (Config. 1), Sternberg (Config. 2)
NASA Test Directors	Sternberg (Config. 1), Marston (Config. 2)
NASA Test Coordinator	Valkov (Config. 1, 2)
LVC Engineering Coordinator	Kim, Willhite
GCS Engineering Coordinator	Loera
Ames Ghost Controller	Bridges

4 System Configuration

All aircraft that participated in this flight test were equipped with navigation systems that use a Global Positioning System (GPS). All manned intruder aircraft were equipped with TCAS, and the Honeywell C90 King Air was equipped with TCAS II version 7.1.

A high level summary of the equipage installed on each aircraft is found in Table 5.

Table 5. Aircraft Equipage.

Aircraft		EDM DRR	ADS-B	GPS	TCAS I	TCAS II	CNPC	Notes
	NASA 870 CFG 1	✓	✓	✓		✓		+ HUD
	NASA 608 CFG 2		✓	✓	✓		✓	
	NASA 850 CFG 1			✓	✓			Z-12 GPS
	N3GC CFG 1, 2		✓	✓		✓		+ TCAS Recorder
	NASA 865 CFG 1, 2		✓	✓	✓			
	NASA 7 CFG 2		✓	✓	✓			

5 Flight Test Administrative Information

5.1 Operating Area

The operating area for Configuration 1 flight test occurred in the Restricted Airspace, R-2515, located at Edwards Air Force Base (EAFB), along with the Buckhorn Military Operating Area (MOA), with operations scheduled and coordinated through the Air Force Test Center (AFTC). Specific airspace scheduled each day during these flight tests included the Four Corners Area, Mercury Spin Area, overflight of the Precision Impact Range Area (PIRA) East/West, and the Buckhorn MOA. These areas within R-2515 are depicted within the yellow shaded area shown in Figure 1.

This operating area was adequate for the majority of the Configuration 1 encounters. However, there were some encounters that required either or both the intruder and ownship to extend north or west, remaining within R-2515, of the airspace. The extensions were required to either start or complete these encounters. For those encounters where an extension was required to accomplish the test encounter, approval from the controlling agency (SPORT) was required. In some cases the extension was not permitted and the encounter was either terminated early or skipped. The Buckhorn MOA was used by the manned intruder aircraft only for many of the test encounters.

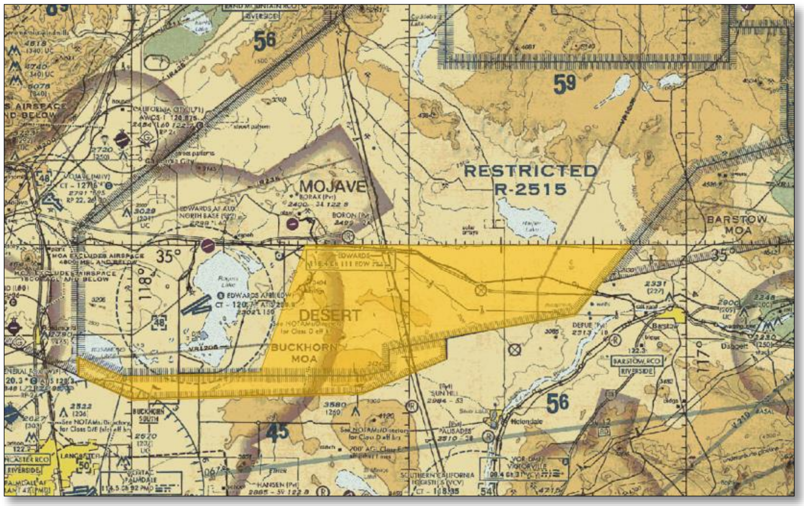


Figure 1. Configuration 1 Flight Test Area.

The operating area for Configuration 2 flight test required both R-2508 and R-2515 due to the length of the mission plan, and therefore, included additional organizational cross talk between High Desert TRACON and SPORT controlling agencies. The Isabella MOA block 10,000 ft MSL to 16,000 ft MSL and the western portion of R-2515 were used for this configuration. The primary working area for this configuration is shown in Figure 2.

The ‘fire mission’ route (depicted in green on Figure 2) was the ownship route of flight. Given that ownship transited between the Isabella MOA and R-2515, prior coordination

was required to ensure a seamless communication flow from one agency to the next. Although on some of the sorties extra coordination was required, for the majority of these flights, no significant issues were noted.

It is important to note that NASA operations within R-2515 are subject to the priority of United States Air Force (USAF) programs under the AFTC. Generally speaking, NASA is given a general priority that is superseded by most other AFTC operations. Configuration 2 flights were impacted by this low prioritization and required several mitigations that were in one case acceptable, and in two other cases, were inadequate. On one occasion the sortie start time was changed to avoid an airspace conflict. This was acceptable to the test team. On two other occasions the ownship route of flight and Intruder's route needed modification to avoid R-2515 altogether. This was not adequate for the test team.

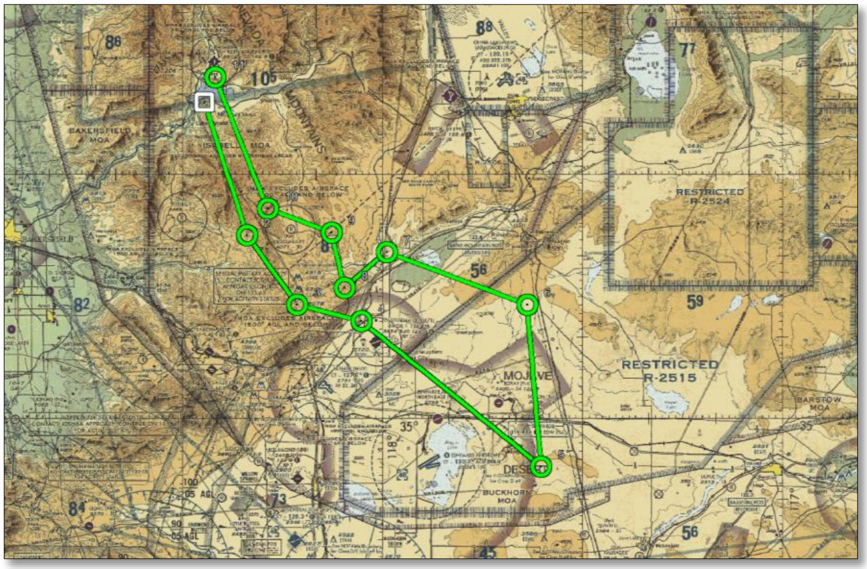


Figure 2. Configuration 2 Flight Test Area.

5.2 Aircraft Staging and Locations

During FT3 both intruders and ownship aircraft operated from three different locations. The Honeywell N3GC aircraft operated from Van Nuys, KVNY, for both configurations, and NASA 608 operated from both Palmdale, KPMD (during systems check flights) and Bakersfield, KBFL, for the three Configuration 2 mission flights. All other aircraft, Ikhana and intruders, operated from Armstrong Flight Research Center, KEDW. The geographical separation resulted in some operational challenges that were overcome with mission planning. Further details on the challenges are listed in later sections of this report. Figure 3 depicts the staging locations for each aircraft.

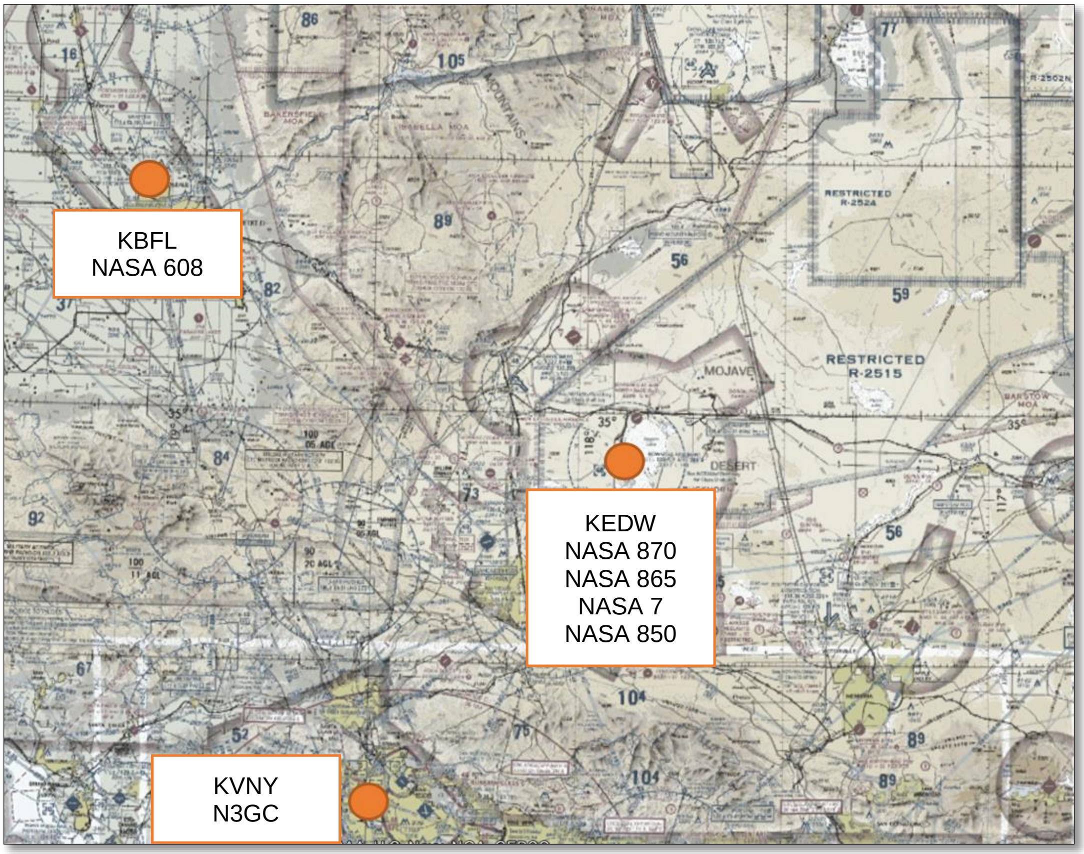


Figure 3. Aircraft Staging Areas.

5.3 Weather

FT3 mission rules, FT3-1 and FT3-2, plus Ikhana Standard-8, required all tests to be conducted in Visual Meteorological Conditions (VMC) conditions and 3 statute miles of visibility with at least 1,000 feet of cloud clearance above and below planned block altitude. Additionally, Ikhana Standard mission rules 9 and 10 prohibited flight into known icing conditions as well as transit through visible moisture for repositioning operations. All other participating aircraft complied with their operating limitations as defined by be their respective flight manuals for repositioning operations.

No Configuration 1 flights were cancelled due to weather and all flights completed as originally scheduled. On Flight 5 the visibility was reduced (due to smoke/haze generated by the Lake fire), although still likely greater than 3 miles; this condition was considered a contributing factor for a mission rule violation when an encounter occurred without the intruder having visual on Ikhana.

Configuration 2 was impacted by weather with one cancellation on 6 August 2015 when broken cloud layers impacted the northern half of the desired operating airspace. All other Configuration 2 flights were completed as scheduled; however, high winds aloft,

greater than 30 kts, were noted on several occasions and needed to be accounted for when controlling each individual intercept. High winds aloft resulting in incorrect compensations were a contributing factor to two or possibly more individual encounters not achieving desired alerting results.

5.4 Stand Alone Facility Mission Control Room

The SAF, located at the NASA AFRC main building, was used by the operations team to coordinate, manage, and execute the flight test. The room was configured with three workstations and multiple support stations; one of the three workstations was dedicated to UAS-NAS operations while the other two were used to support other programs (though not concurrently). Each work station was configured with a DICES III voice communication system and several display monitors, shown in Figure 4. Zeus, Test and Evaluation Command and Control System (TECCS), Ikhana video camera, and Vigilant Spirit Control Station (VSCS) traffic displays provided SA and two-way voice capability to the control room team for test execution.

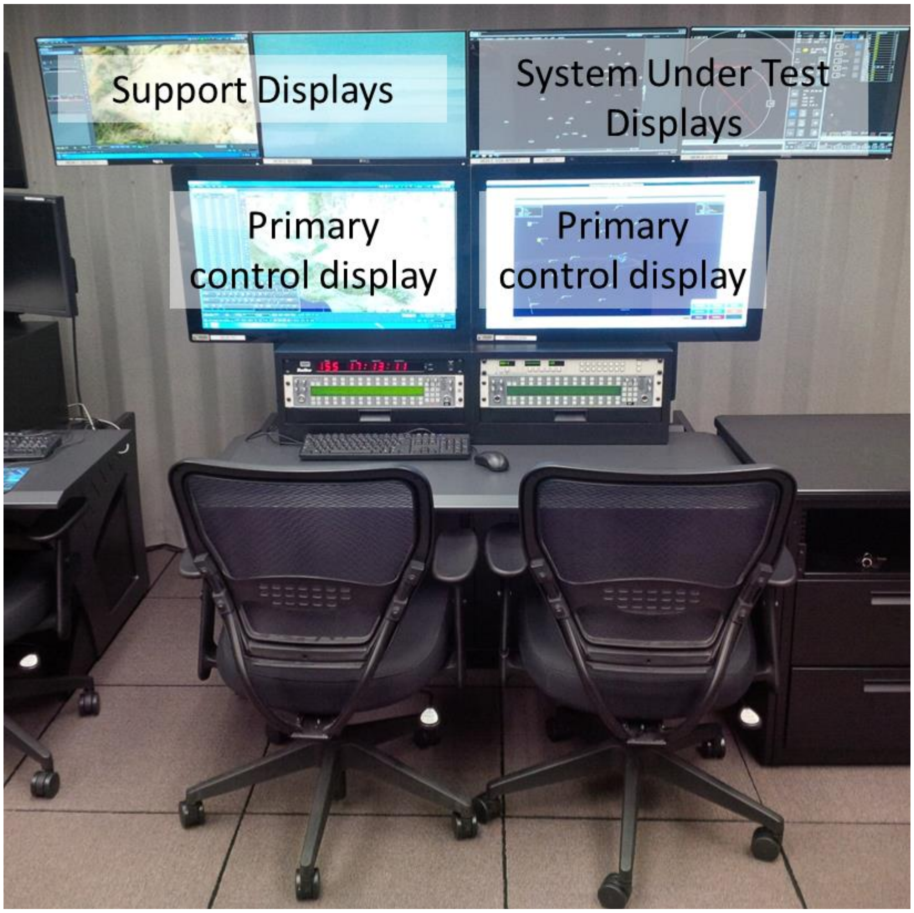


Figure 4. SAF Control Room Displays.

5.4.1 Control Displays

The Raytheon Solipsys Zeus system acted as the primary control display for both Test Conductor (TC) and Test Director (TD) positions. The Zeus system used surveillance radar information to provide Time-Space-Position Information (TSPI) to the test team. The imbedded range and bearing tool were used to maintain range Situational Awareness (SA) in order to ensure mission rule FT3-9 visual required compliance when applicable. The use of Zeus as the SA and mission control tool for FT3 was considered a must-have system and the test was completed with no safety incidents and one mission rule violation.

The upper right two displays (see Figure 4) were repeaters of the SUT data sourced from the LVC. Using these displays the LVC would pipe JADEM, Stratway+, CPDS, and Radar information to the SAF. The upper left two displays were used as test support displays and included a repeater of the Ikhana Heads-Up Display (HUD) video, which provided TCAS advisory information as well as state information for Ikhana such as altitude, heading and airspeed. Additional information was available on the upper left displays and this included Long Range Optics (LRO) (if active) and access to commercial weather sources.

5.4.2 Test Coordinator Position

Throughout the FT3 event an additional position was matured to support data collection. This Test Coordinator position (located to the right of the image in Figure 4) was a simple work station that included a desk, large monitor, and computer docking station. The work station was not restricted to the secure intranet that the TC and TD position required, and enabled access to the external network. The team was able to use public access tools such as Flightradar24®, AviationWeather.gov, SkyVector®, FalconView®, and standard Microsoft Office® products not available on the TC/TD computers.

The primary role for Test Coordinator was to collect test data for use during debrief as well as this report. However, being able to access the aforementioned websites proved to be invaluable as it provided information Zeus could not, such as: take off and land TSPI for KVNY, KBFI and KPMD, screen captures, simple encounter replay, weather information, access to all planning material, and other administrative data. The operations team found this workstation, mission control room position, and external tools as invaluable to supporting the overall flight test execution.

5.5 Mission Information

Executing FT3 flights required a large amount of coordination. Configuration 1 flights were planned at a rate of three flights per week due to the duration of each sortie and the amount of test cards executed per sortie. Furthermore, flying the encounters was user work load intensive, with 10 minutes allocated to each encounter, and setup required in between runs. Further discussion on user workload is found in later sections. Configuration 2 work load was considerably less intensive for the airborne participants as the subject pilot under test was now located in the RGCS and the overall design of the

Full Mission test provided a more controlled environment than is available to a pilot under test operating from an airborne aircraft.

As a pre-requisite to executing Configuration 1 flight tests, a T-1 crew briefing was accomplished the day prior to the event. The T-1 briefing covered, in detail, the following aspects related to the upcoming flight:

- Roll Call
- Mission Summary
- Mission Timeline
- Weather / NOTAMs
- UAS Status
- Mission Information
- GCS Status
- Airspace / Airfield
- Support Assets
- Contingencies
- Miscellaneous
- Flight Card Review

A flight could be delayed or postponed based on information discussed during the T-1 briefing. All team members were required to participate in the briefing either in-person or remotely.

Configuration 2 flights did not require a T-1 for each event. Given the static nature of the Fireline route and intruder routes a T-1 for each flight was considered excessive and any changes were briefed at the pre-flight briefing before conducted 2.5 hours prior to takeoff. Changes were minimal and largely constituted discussion of contingency plans for loss of airspace or weather effects.

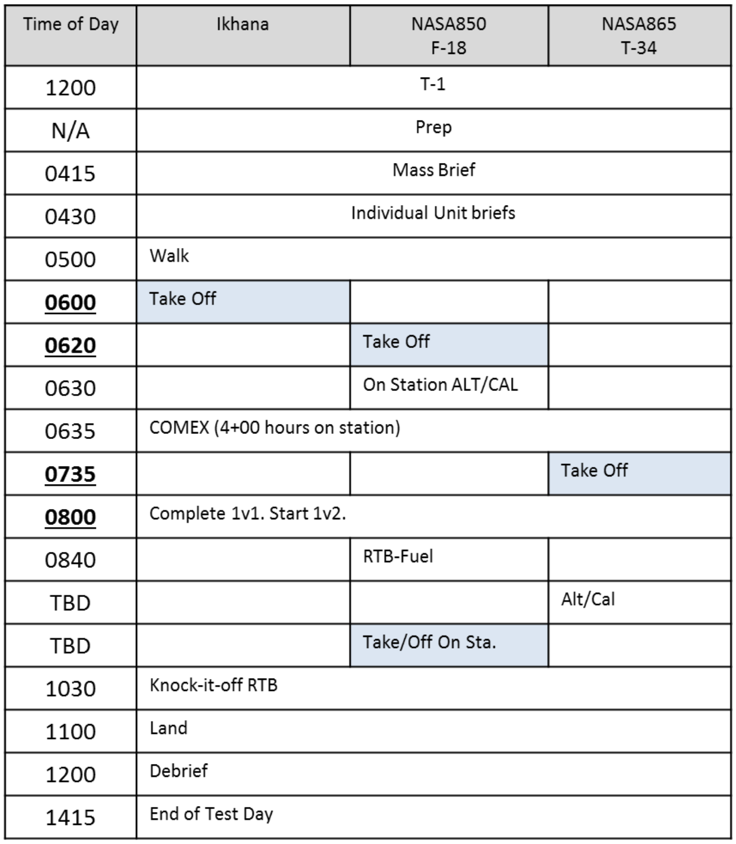
All FT3 Configuration 1 flights started at 0600 (local) Pacific Time. Subsequently, the morning brief was held at 0415L. The morning briefings covered at a higher level the same information with emphasis on any changes from the previous T-1 briefing. The intent was for this briefing to be about 15 minutes in length. A final go/no-go decision was made at this briefing. After the brief, the team was dismissed to prepare for the flight and in some cases additional crew familiarity training was conducted for each display SUT. The SAF was manned at approximately 0545L to support any systems troubleshooting or coordination efforts required by the supporting aircraft teams.

In general, flights were planned for approximately 5 hours. One hour of that total flight time was allocated to transit, altitude calibration, and systems startup procedures. The limiting factor for the Ikhana was frequency coordination and typically required an OFF time of 1100L for both Satcom and Line of Sight (LOS) frequencies. For the intruders, fuel

available was the limiting factor. TheT-34C aircraft could only support up to 3.5 hours of flight time while the King Air aircraft could support 4.0 hours although on a few occasions N3GC dropped into Victorville for fuel and then returned to KVNY thereafter, which provided the test team an additional 20 minutes of play time. Moreover, the longer transit times required by N3GC due to operating out of KVNY had to be considered for fuel planning.

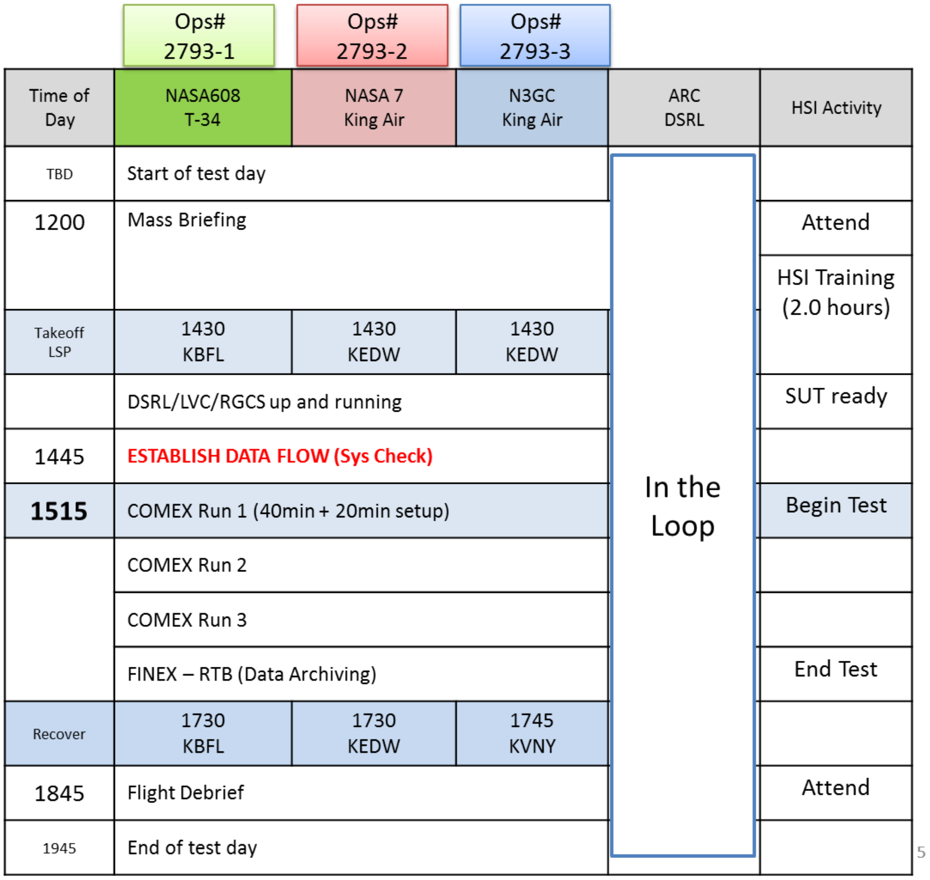
A flight debrief was mandatory in order to discuss the day's flight events, identify any aircraft discrepancies, and discuss test inefficiencies that may have decreased the number of encounters and test objectives achieved. Action items were assigned for issues and lessons learned that needed to be closed out prior to the next flight. A post-flight test card review and high level data analysis was conducted as well. If the next flight occurred on the following day, a T-1 was then conducted to review test objectives for that next flight, otherwise the T-1, as appropriate, prior to the next test opportunity.

The following figures show the basic Configuration 1 and 2 timelines previously discussed. Start of test day for Configuration 1 flights was typically 0415L and completed around 1415L. While the Configuration 2 flights started at 1200L and end of test day was approximately 1945L.



Time of Day	Ikhana	NASA850 F-18	NASA865 T-34
1200	T-1		
N/A	Prep		
0415	Mass Brief		
0430	Individual Unit briefs		
0500	Walk		
0600	Take Off		
0620		Take Off	
0630		On Station ALT/CAL	
0635	COMEX (4+00 hours on station)		
0735			Take Off
0800	Complete 1v1. Start 1v2.		
0840		RTB-Fuel	
TBD			Alt/Cal
TBD		Take/Off On Sta.	
1030	Knock-it-off RTB		
1100	Land		
1200	Debrief		
1415	End of Test Day		

Figure 5. Configuration 1 Timeline.



	Ops# 2793-1	Ops# 2793-2	Ops# 2793-3		
Time of Day	NASA608 T-34	NASA 7 King Air	N3GC King Air	ARC DSRL	HSI Activity
TBD	Start of test day			In the Loop	
1200	Mass Briefing				Attend
					HSI Training (2.0 hours)
Takeoff LSP	1430 KBFL	1430 KEDW	1430 KEDW		
	DSRL/LVC/RGCS up and running				SUT ready
1445	**ESTABLISH DATA FLOW (Sys Check)**				
1515	COMEX Run 1 (40min + 20min setup)				Begin Test
	COMEX Run 2				
	COMEX Run 3				
	FINEX – RTB (Data Archiving)				End Test
Recover	1730 KBFL	1730 KEDW	1745 KVNY		
1845	Flight Debrief				Attend
1945	End of test day				

Figure 6. Configuration 2 Timeline.

5.6 Training and Qualifications

All visiting flight crew team members were required to participate in local area familiarization briefing and conduct a local area familiarization flight. In addition, all flight crew and mission team members were required to have obtained current Crew Resource Management (CRM) training. The TC and TD were required to obtain a formal approval from the NASA Armstrong Director of Flight Operations in order to serve in that capacity. The requirements for the FT3 test conductor were derived from NASA Armstrong DCP-O-003, Mission Control Procedure. The requirements were tailored from the mission controller section.

5.6.1 Pre-Test Coordination and Training

A training event was conducted approximately one month prior to the start of test. Representatives from all aircraft participants, SUT stakeholders, and IT&E operations were present. The following is a list of training and coordination conducted.

<u>Admin / Motherhood</u>

- R-2508 annual refresher training – Conducted by R-2508 representatives

- R-2515 detailed training – Conducted by R-2515 Sport representatives
- International Traffic in Arms Regulations (ITAR) constraints
- Basic flight admin expectations

Test Admin

- Mission Rules and Go/No-Go criteria
- Roles and responsibilities
- Terminology
- General flight day timeline
- Communication plan
- Altimeter check
- Success criteria
- Contingencies, aborts and lost links

Test Execution

- Specific encounters and test card overview

At the completion of this training event all stakeholders and aircrew were considered prepared and ready to support the FT3 events in the planned airspace, by all oversight organizations.

5.6.2 System Under Test Training

SUT training was conducted closer to the actual flight date. Aircrew availability and Subject Matter Expert (SME) availability were the two primary reasons that the training was conducted either as part of the T-1 briefing or following the flight briefing at 0415L. This training was used to inform the aircrew who would be executing the flight what each SME was expecting from them. The following questions were addressed during these exchanges

- Test configuration. What does the SME/Researcher want; ON, OFF or de-energized.
- Maneuver type. Maneuvering (mitigated) or Non-maneuvering (unmitigated).
- Guidance type. Will the SUT provide directive or descriptive guidance?
- Display under test familiarity. What display will the aircrew be using to gain SA and make a maneuver decision?
- Miscellaneous expectations. Is there anything specific to a particular SUT that the aircrew need to know?

Given that there were multiple SUT being evaluated during FT3, variations were observed in the quantity and quality of training that the aircrew received. Training conducted by the SME on the CPDS system was considered the most thorough, timely, and informative. The CPDS training was conducted the day prior to the flight in a separate presentation

with just the operations team present. Representations of CPDS in both picture format as well as a replay of previous simulated events were presented to the crew. In some cases, training and explanation of the SUT were required during the conduct of the flight. Had the training sessions been more thorough, using the CPDS training as an example, more efficiencies would have been gained by the test team and potentially better data collected. This is due to the flight crew would have better understood the SUT and expectations on its use during flight.

5.7 Altimeter Calibration

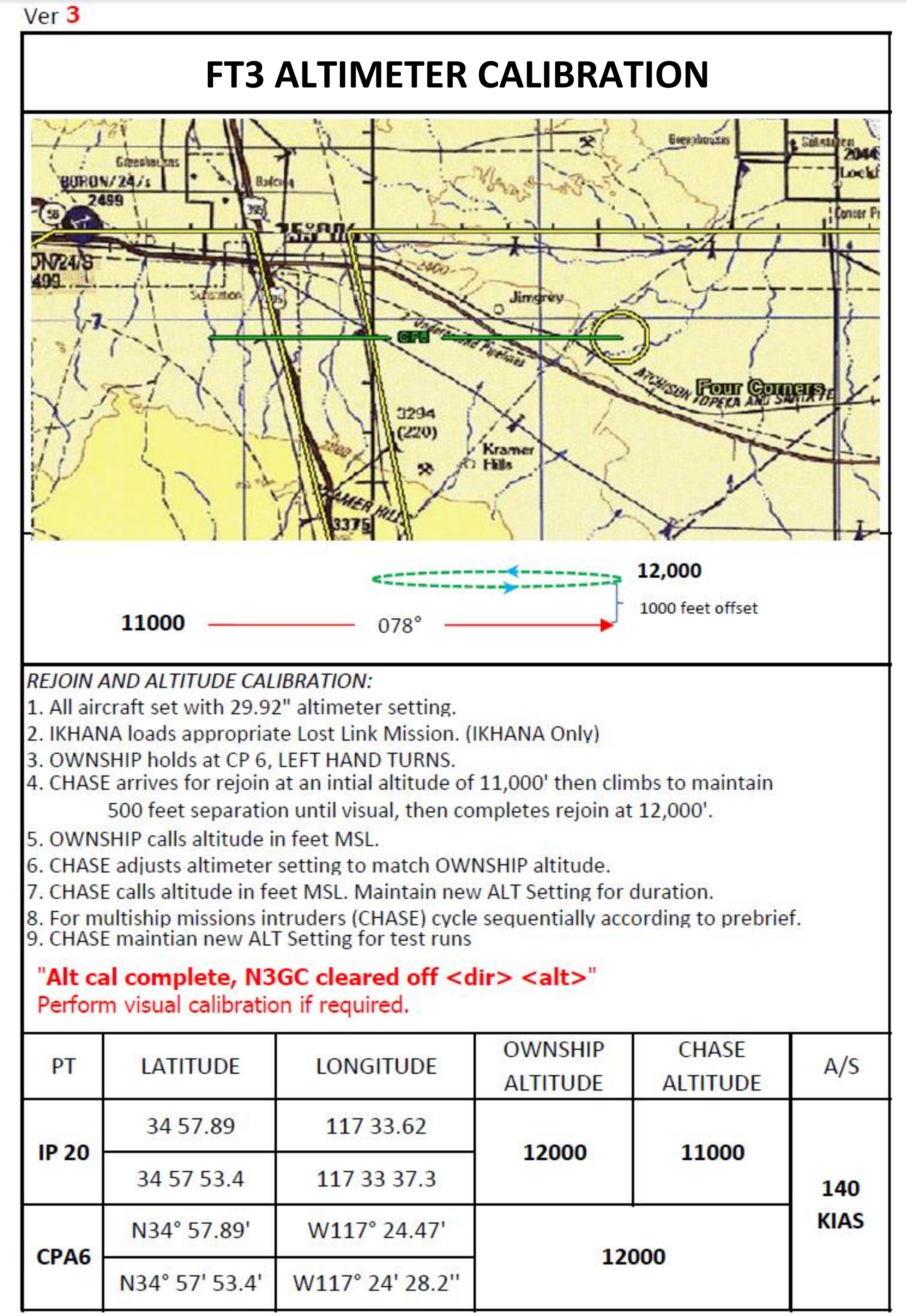
An altimeter calibration was required for all encounters where the vertical separation between intruders and ownship was less than 500 ft (MR FT3-20). The mission rule was enforced for Configuration 1 flights; however during Configuration 2, it was waived and not required for reasons explained in Section 5.7.2.

5.7.1 Configuration 1

The altimeter calibration was designed to take out the standard errors found within the pitot-static systems in order to ensure the planned vertical separation was as close to planned as possible. According to FAR 91.411 and Appendix E of Part 43 aircraft pitot systems must be within 75 ft of field elevation when dialed into the local altimeter setting. Additional errors come with changes in altitude and airspeed. Since some of the planned encounters were with a 200 ft vertical separation, it was possible to be much closer with the errors identified above if they were not mitigated with the calibration.

The calibration was conducted at a flight condition that closely approximated all the planned encounters; 140 KIAS and 13,000 ft MSL. The Ikhana platform set standard 29.92 inHg and the other aircraft adjusted their altimeter settings to show a 13,000 ft altitude. At those conditions each participating aircraft observed the same difference from Ikhana. N3GC consistently showed 60 ft high and NASA865 100 ft high.

The altimeter calibration was performed prior to each flight that required it using the flight card shown in Figure 7.



Ver **3**

FT3 ALTIMETER CALIBRATION

REJOIN AND ALTITUDE CALIBRATION:

1. All aircraft set with 29.92" altimeter setting.
2. IKHANA loads appropriate Lost Link Mission. (IKHANA Only)
3. OWNSHIP holds at CP 6, LEFT HAND TURNS.
4. CHASE arrives for rejoin at an intial altitude of 11,000' then climbs to maintain 500 feet separation until visual, then completes rejoin at 12,000'.
5. OWNSHIP calls altitude in feet MSL.
6. CHASE adjusts altimeter setting to match OWNSHIP altitude.
7. CHASE calls altitude in feet MSL. Maintain new ALT Setting for duration.
8. For multiship missions intruders (CHASE) cycle sequentially according to prebrief.
9. CHASE maintian new ALT Setting for test runs

"Alt cal complete, N3GC cleared off <dir> <alt>"
Perform visual calibration if required.

PT	LATITUDE	LONGITUDE	OWNSHIP ALTITUDE	CHASE ALTITUDE	A/S
IP 20	34 57.89	117 33.62	**12000**	**11000**	**140 KIAS**
	34 57 53.4	117 33 37.3			
CPA6	N34° 57.89'	W117° 24.47'	**12000**		
	N34° 57' 53.4'	W117° 24' 28.2"			

Figure 7. Altimeter Calibration Flight Card.

5.7.2 Configuration 2

Although the Configuration 2 encounters were planned at 400 ft altitude separation, the test team received approval to waive the altimeter calibration as the conduct of such would require approximately 30 min to complete, with limited technical and no safety value. For the following reasons the team elected to exclude the altimeter calibration:

- All aircraft set local altimeter settings.
- All participating aircraft are both properly maintained (24 month certification) and perform a ground altimeter check daily based off of known field elevation with local altimeter set (±75 ft) prior to takeoff. (AIM 7-2-3, Part 43 Appendix E)
- All aircraft are TCAS equipped.
- Ownship will be maneuvering (lateral or vertical) away from conflict.
- Configuration 2 encounters are self-separation alerting encounters where the alerting threshold is 120 seconds prior to Closest Point of Approach (CPA).
- All participating aircraft are manned and all encounters require Visual Identification (VID) by 1 nautical mile (NM) between aircraft based off TCAS (MR FT3-9).
- Altimeter calibration data was not required for user interface SUT.

The decision to not conduct an altimeter calibration during Configuration 2 flights did have an impact on safe operations. Positively, the team was able to conduct two Fireline route data collection runs per test day. Had an altimeter calibration been conducted, the ability to conduct two runs may have been limited or not possible. However, deviations closer than 400 ft of separation were prohibited, and in multiple instances, that separation was too great and failed to trigger the appropriate SUT alerting. Had the runs been conducted at 300 or 200 ft of separation, the alerting would likely have been what was desired by the researchers. The team elected to not attempt any encounters less than 400 ft without conducting a calibration.

5.8 Safety and Mission Rules

All operations were conducted in accordance with NASA AFRC safety policies outlined in DCP-S-001 and 002. A safety representative was present for all operations planning and was responsible for chairing the SSWG. All encounters and configurations were concurred with by the safety representative. The following Mission Rules were developed in a coordinated effort with the need to maintain approved levels of safety paramount.

Table 6 Mission Rules were used during Configuration 1 flights. They comprised two sections: the first section is the standard to Ikhana project rules and independent of the supported project. The second being specific to FT3.

Table 6. Configuration 1 Mission Rules.

Rule #	Rule Description – Flight	Rationale/Hazard Report	Notes
Ikhana Standard			
1	Any team member may call an abort for pilots to abort the flight at any time for safety reasons	SOP, FT3-01, FT3-02, FT3-07	
2	Only authorized AFRC employees and AFRC approved pilots are permitted to operate the aircraft	Restrict pilots/operators to the authorized group	
3a	Only authorized AFRC employees and AFRC approved System Monitors (Sys Mons) are permitted to operate the GCS	Restrict System Monitors (Sys Mons) to the authorized group	
3b	Only authorized AFRC employee and AFRC approved Flight Systems Engineers (FSEs) are permitted to assist the PIC and operate Payloads from PSO2	Restrict Flight Systems Engineers (FSEs) to the authorized group	
4	Ikhana will be operated according to FAA, AFRC, USAF, CBP, and General Atomics standard and emergency procedures	SOP, AFRC Aircraft Checklist for Hosting; Space Act Agreement, FT3-01, FT3-03	
5	Flight will remain within R-2515 and in accordance with any applicable COA restrictions for Predator B	SOP	
6	No envelope expansion tests will be performed	FT3-05, FT3-06, FT3-13	
8	Flights will be conducted in VMC conditions of no more than moderate turbulence.	SOP COA requirement - VMC	
9	No flight in known icing conditions	Standard Hazard Mitigation No de-icing capability	
10	No flight through opaque clouds, nor sustained flight through translucent clouds	Standard Hazard Mitigation No de-icing capability Laminar flow wing	
11	Monitor weather forecasts for icing conditions	Standard Hazard Mitigation No de-icing capability	
12	No flight over densely populated areas	Standard Hazard Mitigation, Dryden Range Mission Rule	
13	No flights above 45,000 ft	DEEC envelope clearance has only been conducted to 45,000 ft	
14	Inside R-2515, the AFRC/EAFB RSO has real-time directive authority, including vehicle destruction, to the Ikhana pilot. Note: RSO responsibility and authority may be delegated to the Ikhana PIC as a result of RSO recommendation and Tech Brief Committee concurrence.	Range Safety Plan	
15	If returning with a controllable, but compromised aircraft, to the best degree possible, the flight path will avoid over flight of populated areas and major roads to the maximum extent possible	AFRC process for Range Safety Requirement to avoid population areas, FT3-14	
16	If generator out, land at EDW 22/04 with battery bus voltage at least 23.6V, otherwise, make a lakebed landing.	Provides at least >=20 minutes of battery power to land, taxi, and shutdown aircraft	

FT3 Specific			
FT3-1	Test runs will be conducted in VMC with inflight visibility at least 3 statute miles.	Standard Hazard Mitigation	
FT3-2	Test runs will be conducted clear of clouds and with at least 1000’ cloud clearance above and below the planned test block, including abort maneuvers.	FTP, Standard Hazard Mitigation	
FT3-4	At the beginning of each test run, pilots will check their navigational system accuracy; runs with less than 500’ vertical separation will be aborted if the predicted error exceeds 0.1 nm.	FTP, Mission Rule, FT3-01, FT3-02	Acceptable error is 0.1 nm
FT3-5	All participating aircraft will maintain at least 1000’ vertical separation from other participating aircraft between test runs unless visual. Maintain deconfliction altitude noted on each test card or as instructed.	FTP, Standard Hazard Mitigation, FT3-03	
FT3-6	Intruder aircraft will not climb/descend to scenario altitude until Ikhana has reestablished its deconfliction altitude.	FTP, Mission Rule, FT3-03	
FT3-7	The test run will be aborted if a UAS loses LOS Link.	Hazard Mitigation FT3-03	This MR is not applicable during low altitude test runs.
FT3-8	The test run will be reset if timing constraints of ±5 to ±10 seconds (as defined for each test encounter) cannot be met by a minimum of 120 seconds prior to CPA.	FTP, Hazard Mitigation	Number of seconds is test run/point specific Some test runs/points will be greater than 120 secs of steady state variables.
FT3-9	For all test encounters where vertical separation is less than 500’, the test run will be aborted if all manned aircraft do not have visual on all participating aircraft at any point inside 1 nm separation.	FTP, Hazard Mitigation	
FT3-10	During auto TCAS runs, the test run will be aborted if Ikhana begins an automatic maneuver in the opposite direction than expected for that test encounter.	Hazard Mitigation, FT3-01	
FT3-11	The test run will be aborted if any aircraft is off-track by more than 0.1NM inside 1 minute to CPA.	FTP, Mission Rule, FT3-01	
FT3-12	The manned intruder pilot will not follow a TCAS contrary to the pre-briefed abort procedures unless they have reason to believe the RA is generated by non-participating traffic and they have SA on ownship position.	FTP, Hazard Mitigation	
FT3-13	Update of the appropriate Ikhana Lost Link Mission variables (Entry Waypoint, ILLH, ILLA) will be verified, by both aircrew and the Mission Director, prior to commencing each test run.	FTP, Hazard Mitigation, FT3-01, FT3-03	Lost link mission identified on each test card.
FT3-14	When not on a test run, Ikhana crew will ensure SAAP Maneuver Mode is set to ADVISORY or OFF.	Mission Rule, FT3-02	
FT3-15	Anytime below 5000’ AGL, SAAP auto maneuvering modes will be ADVISORY or OFF.	Mission Rule, FT3-02, FT3-19	
FT3-16	Confirm each aircraft’s nav system time matches the UTC time hack given in the pre-flight brief.	Mission Rule	
FT3-17	The test run will be aborted if any aircraft is off altitude by more than 50’ toward other aircraft inside 1 minute to CPA.	FTP, Standard Hazard Mitigation, FT3-01	

FT3-18	A 200’ foot min vertical separation shall be maintained for all test geometries.	Mission Rule	
FT3-19	Flight operations outside of the approved mission flight envelope for Ikhana are prohibited during test encounters	FT3-14	
FT3-20	A side-by-side altitude calibration will be performed between aircraft for any mission that includes an encounter less than 500 ft vertical separation.	Mission Rule	Applicable to Configuration 1a and 1b

Table 7 lists the Mission Rules applicable to Configuration 2 flights. Since Ikhana was not participating the list is significantly reduced and supplanted with platform specific flight manual operational limitations.

Table 7. Configuration 2 Mission Rules.

Rule #	**Rule Description – Flight**	**Rationale/Hazard Report**	**Notes**
FT3 Configuration 2 Specific			
FT3-1	Test runs will be conducted in VMC with inflight visibility at least 3 statute miles.	Standard Hazard Mitigation	
FT3-2	Test runs will be conducted clear of clouds and with at least 1000’ cloud clearance above and below the planned test block, including abort maneuvers.	FTP, Standard Hazard Mitigation	
FT3-4	At the beginning of each test run, pilots will check their navigational system accuracy; runs with less than 500’ vertical separation will be aborted if the predicted error exceeds 0.1 nm.	FTP, Mission Rule, FT3-01, FT3-02	Acceptable error is 0.1 nm
FT3-9	For all test encounters where vertical separation is less than 500’, the test run will be aborted if all manned aircraft do not have visual on all encounter aircraft at any point inside 1 nm separation.	FTP, Hazard Mitigation	Lateral and Vertical vectors may be applied prior to an abort to maintain applicable separation.
FT3-12	The manned intruder pilot will not follow a TCAS contrary to the pre-briefed abort procedures unless they have reason to believe the RA is generated by non-participating traffic and they have SA on ownship position.	FTP, Hazard Mitigation	
FT3-16	Confirm each aircraft’s nav system time matches the UTC time hack given in the pre-flight brief .	Mission Rule	
FT3-18	A 200’ foot min vertical separation shall be maintained for all test geometries.	Mission Rule	
FT3-21	Intentional ownship vertical maneuvers towards intruder aircraft shall not be made within 60 seconds of CPA during live intruder encounters.	Mission Rule	

Additionally, during all FT3 flights a Senior Operations Representative (SOR) was present in the SAF. The SOR acted as a spokesperson for the NASA AFRC Director of Flight Operations and their responsibility was to monitor general conduct of the flight test operations, monitor the team’s real-time decisions, and initiate the Aircraft Incident Response Procedure (DCP-S-001) in the case of an aircraft mishap.

6 Flight Execution

The Flight Test Series 3 was split into two distinct phases: Pairwise Encounters (Configuration 1) and Full Mission Encounters (Configuration 2). The following sections describe the flight execution activities related to each phase.

6.1 Configuration 1: Pairwise Encounters

This test configuration evaluated the advisories generated by the Self Separation and Collision Avoidance Algorithms fed by data from live aircraft during flight. Flight Test Configuration 1 was further defined into two distinct groups, Configuration 1a and 1b. Configuration 1a involved flight test encounters using NASA's Ikhana aircraft as the low speed ownship. Configuration 1b was planned for use of a high-speed ownship aircraft. However, the aircraft planned for Configuration 1b ultimately could not support the FT3 event.

In these tests the Ikhana ownship aircraft was flown against either one or two manned intruder aircraft. Both Self Separation and Collision Avoidance algorithms were evaluated. The SS algorithms were evaluated using both mitigated and unmitigated encounters. Unmitigated, also known as fly-through and non-maneuvering encounters, were designed for each aircraft to fly the route as planned all the way to CPA regardless of alerting displayed. These encounters evaluated each SUT's ability to maintain the correct alerting thresholds. The mitigated encounters were designed for the test aircrew to maneuver the ownship aircraft away from the Collision Avoidance Threshold (CAT) or Near Mid-Air Collision (NMAC) thresholds and maintain a well clear distance between intruder and ownship. Table 8 categorizes each SUT.

Table 8. Configuration 1 SUT Summary.

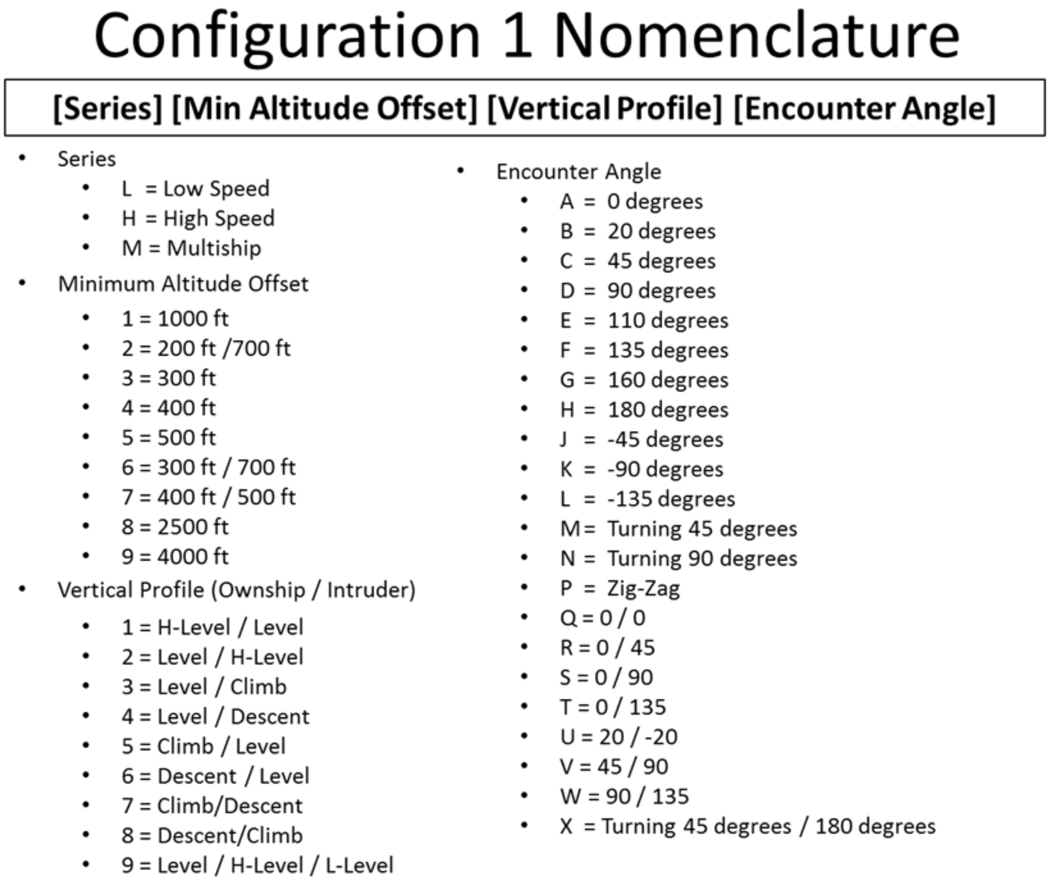
SUT	Researcher/Developer	SS	CA	Mitigated	Unmitigated
JADEM	Ames Research Center	Primary	Secondary	Yes	Yes
Stratway+	Langley Research Center	Primary	Secondary	Yes	Yes
CPDS	GA – ASI & TU Delft	Primary	Secondary	Yes	No
Radar	GA – ASI	Primary	Secondary	No	Yes
TCAS	GA – ASI	Secondary	Primary	Yes	No

6.1.1 Configuration 1 Nomenclature Development

Based on requirements from researchers, a nomenclature was developed to capture the needs of each scenario. Each encounter's name included four parts:

1. Type of encounter. Low speed players, high speed players, or multi-ship encounter
2. Altitude offset between the ownship and intruder(s).
3. Vertical profile.
4. Angle of the intruder flying relative to ownship's path. For some letter indices, two angles were defined to accommodate multi-ship encounters.

The full set of nomenclature definition is shown in Figure 8.



Configuration 1 Nomenclature

[Series] [Min Altitude Offset] [Vertical Profile] [Encounter Angle]

- Series
  - L = Low Speed
  - H = High Speed
  - M = Multiship
- Minimum Altitude Offset
  - 1 = 1000 ft
  - 2 = 200 ft /700 ft
  - 3 = 300 ft
  - 4 = 400 ft
  - 5 = 500 ft
  - 6 = 300 ft / 700 ft
  - 7 = 400 ft / 500 ft
  - 8 = 2500 ft
  - 9 = 4000 ft
- Vertical Profile (Ownship / Intruder)
  - 1 = H-Level / Level
  - 2 = Level / H-Level
  - 3 = Level / Climb
  - 4 = Level / Descent
  - 5 = Climb / Level
  - 6 = Descent / Level
  - 7 = Climb/Descent
  - 8 = Descent/Climb
  - 9 = Level / H-Level / L-Level
- Encounter Angle
  - A = 0 degrees
  - B = 20 degrees
  - C = 45 degrees
  - D = 90 degrees
  - E = 110 degrees
  - F = 135 degrees
  - G = 160 degrees
  - H = 180 degrees
  - J = -45 degrees
  - K = -90 degrees
  - L = -135 degrees
  - M = Turning 45 degrees
  - N = Turning 90 degrees
  - P = Zig-Zag
  - Q = 0 / 0
  - R = 0 / 45
  - S = 0 / 90
  - T = 0 / 135
  - U = 20 / -20
  - V = 45 / 90
  - W = 90 / 135
  - X = Turning 45 degrees / 180 degrees

Figure 8. Configuration 1 Pairwise Encounters Nomenclature.

This nomenclature would help define and distinguish encounters, and give a quick, simple assessment of the type of encounter being performed.

6.1.2 Configuration 1a Low Speed Ownship

Configuration 1a encounters used a low speed ownship (<210 KGS). Some of these encounters (noted) consisted of a high speed intruder (≥210 KGS).

6.1.2.1 Ames (AutoResolver) Pairwise Encounter Geometries

Ames' low-speed ownship Pairwise Encounters were designed to test the AutoResolver/JADEM algorithm. The algorithm was further divided into two, AutoResolver 1 and 2, with different alerting thresholds. Ames' encounters were divided in three types: fly-through/maneuvering climbs/descents/level (Figure 9), fly-through alerting TCAS (Figure 10), and high-speed intruder (Figure 12). The vertical profiles for the fly-through/maneuvering encounters is shown in Figure 11. Below is an explanation of each.

Aircraft in the fly-through scenarios fly towards a target CPA of 0 NM horizontal offset. Actual CPA is not critical since any CPA can be compared to the CPA predictions. It is desirable, however, to fly close enough to trigger a self-separation alert. The maneuver encounters are scenarios in which the pilot maneuvers the aircraft as directed by the specific self-separation display.

These fly-through/maneuvering encounters tested various angles into: 0°, 45°, 90°, 110°, 180°, and a 45° and 90° blunder into. All encounters had a minimum 1,000 ft vertical separation that was offset artificially within the algorithm, so as to make the ownship and intruder appear co-altitude.

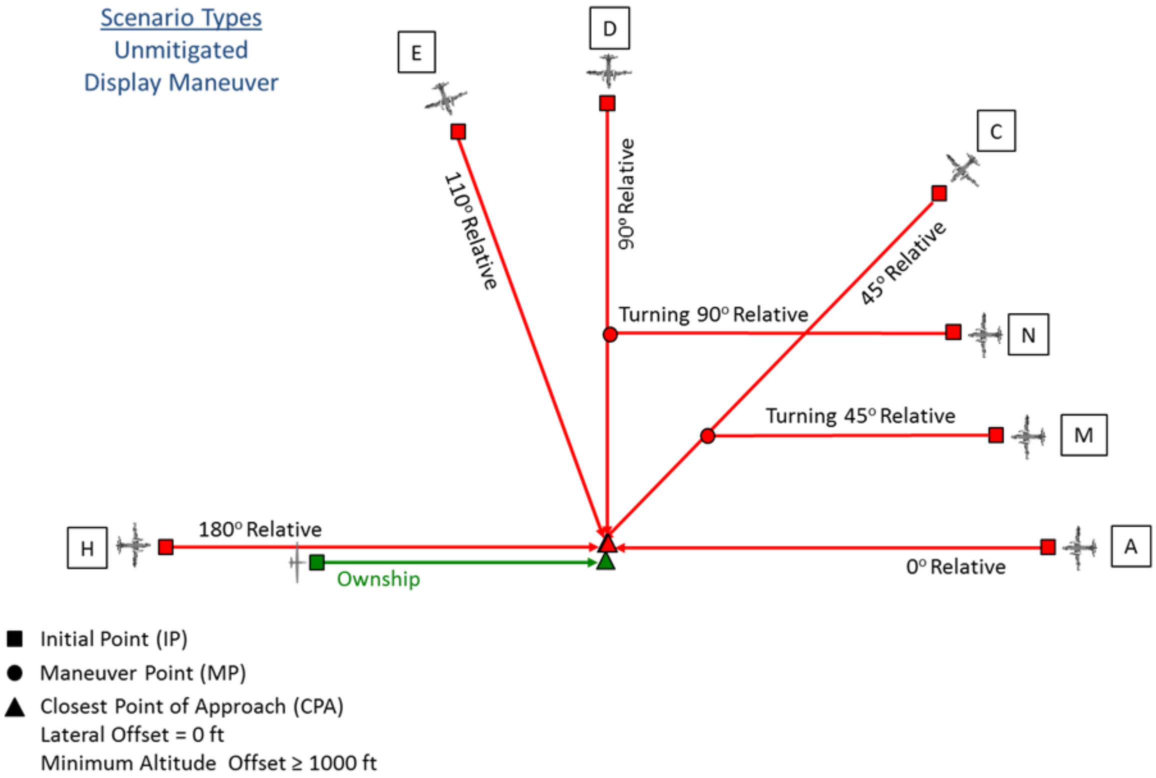


Figure 9. ARC Pairwise Encounter Angles 1.

The TCAS/Self Assurance/Sense and Avoid Interoperability (SSI) encounters were designed to evaluate interoperability between TCAS and self-separation systems. Self-separation systems are expected to keep the ownship well clear of an intruder. Although well clear is not specifically defined to avoid alerting the intruder's TCAS, alerting TCAS can generally be considered not well clear. Ideally, the self-separation alert would trigger long before the TCAS alert.

These encounters were designed simply as a fly-through to gather data. Because the vertical profile was planned to go as close as 300 ft, a "build-up" approach was used; the encounters were flown first at 1,000 ft, then 500 ft, and finally, 300 ft. To stay consistent,

all of these encounters employed the 3,000 ft lateral separation (although only the 300 ft encounter required the lateral offset). These encounters had an angle into of 0°, 45°, and 90°.

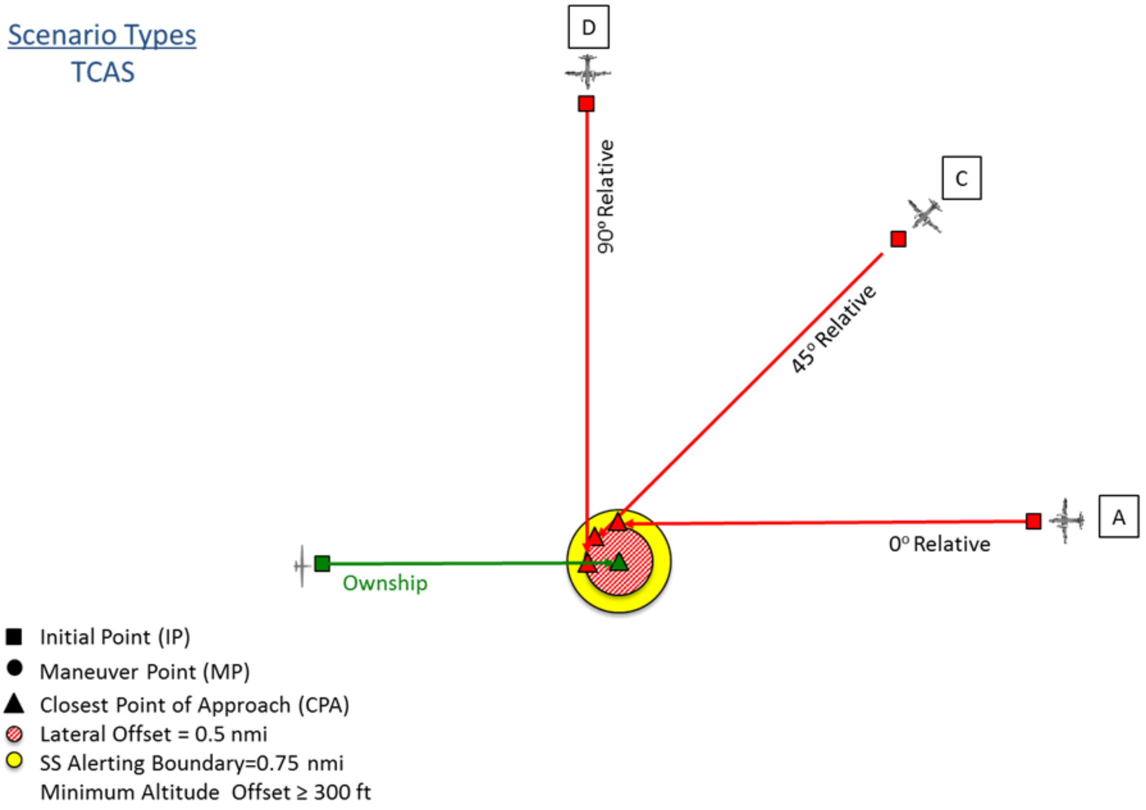


Figure 10. ARC Pairwise Encounter Angles 2.

The vertical profiles for all of Ames' low-speed intruder encounters is shown in Figure 11. For the fly-through/maneuver encounters, angles 0°, 45°, and 90° required climb/descent airspeed as opposed to groundspeed, and are explained in detail in Section 6.1.2.1.1. Angles 110°, 180°, turning 45°, and turning 90° had 1,000 ft vertical separation. Fly-through alerting TCAS had 1,000 ft, 500 ft, and 300 ft separation.

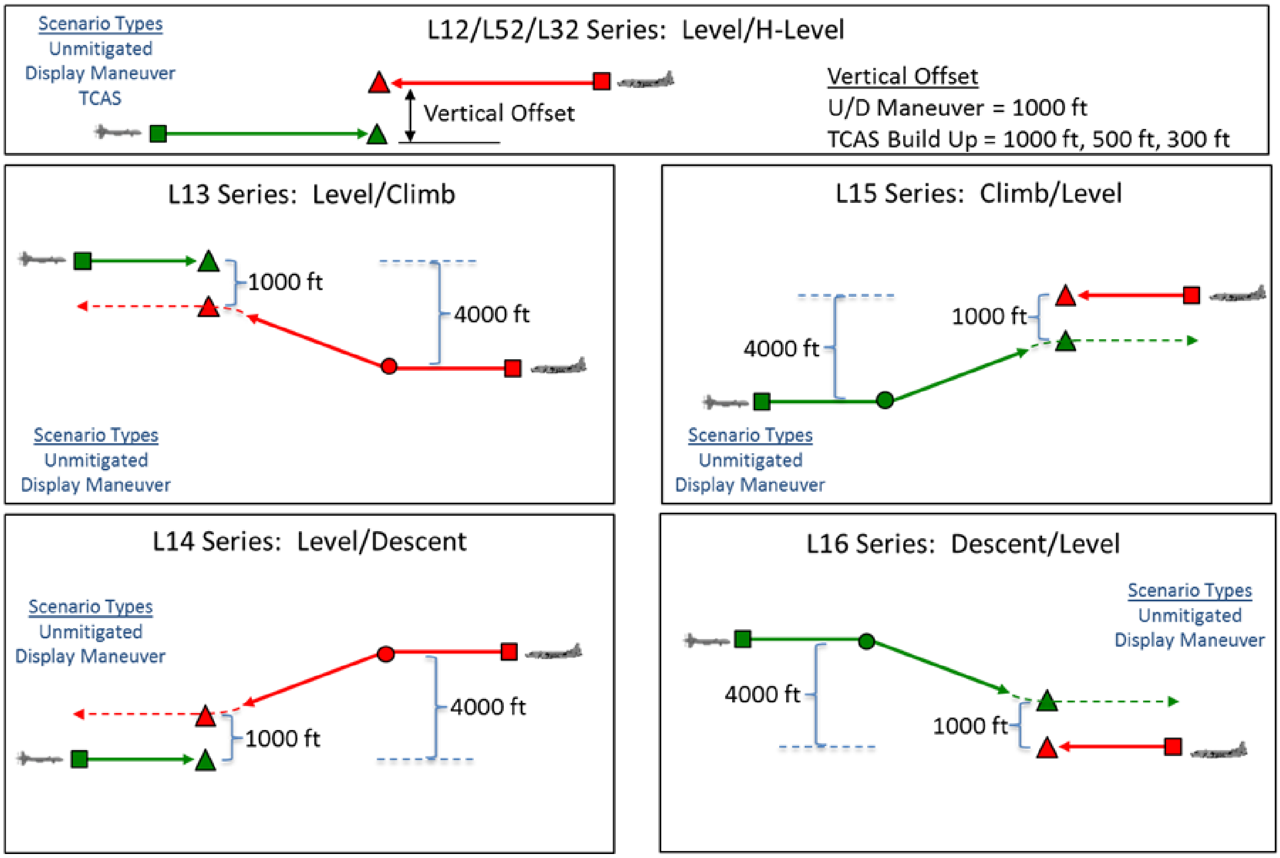


Figure 11. ARC Pairwise Encounter Vertical Profiles.

As mentioned, Ames required cases with a high-speed intruder to mimic jet aircraft conditions. The angles for these encounters were 0°, 45°, 90°, and overtaking 180°. These encounters were done both as a fly-through and a maneuver performed with required 1,000 ft vertical separation, shown in Figure 12.

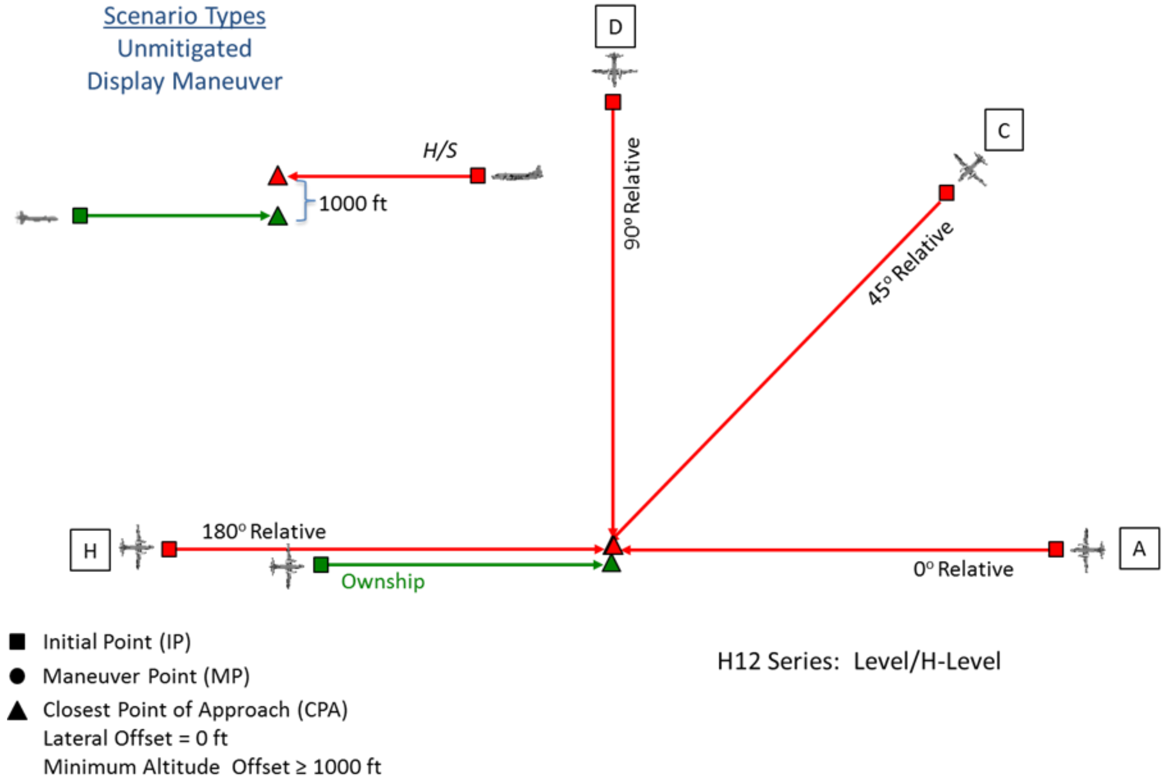


Figure 12. ARC High Speed Intruder Pairwise Encounter Angles.

6.1.2.1.1 ARC Indicated Airspeed Encounter Wind Matrix

To validate ARC's simulation results for AutoResolver/JADEM, a slightly different approach was required for their climbing and descending encounters. Because their simulations were built using indicated airspeed (KIAS) as opposed to knots groundspeed (KGS), the researcher requested that all of these climb/descent encounters be flown with a constant airspeed.

However, this posed a problem for CPA timing. All other encounters were designed with groundspeed in mind, so that daily variable winds aloft would not affect the timing of the encounter. To mitigate this problem for ARC's climb/descent encounters, a wind adjust matrix was built to help with timing and variable winds.

As depicted in Table 9, the Wind Adjust Matrix used a spreadsheet format to calculate relative timing from the Initial Point (IP). Each series of climb/descent encounters (L13, L14, L15, and L16) were designed to start at a specific altitude. Using this altitude, a true airspeed (KTAS) was calculated for the desired airspeed. Once current winds were input (green boxes, wind speed and wind direction) simple trigonometry was used to show the headwind the aircraft would experience for that encounter based on encounter angle. Distance adjust value was then calculated (more or less distance traveled for the encounter) based on headwind and the leg length. Although the researcher originally

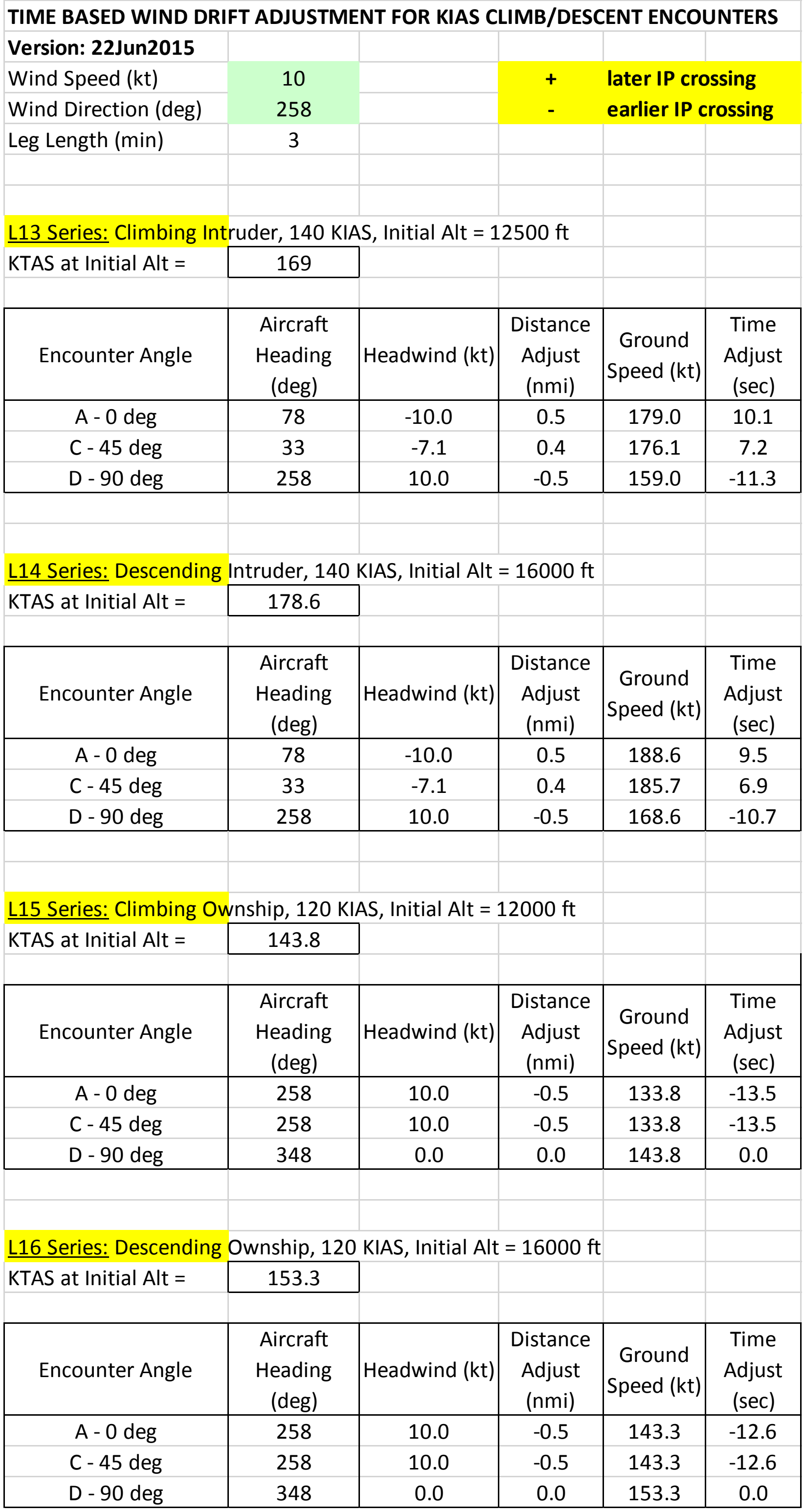
wished to communicate this distance adjust to the pilots, operationally it made more sense to communicate a time adjust. Therefore, two additional values were calculated: the groundspeed the aircraft would experience based on the headwind and true airspeed at altitude, and finally a time adjust was calculated using the simple formula time = distance / rate, using the distance adjust and groundspeed.

For each of the encounters of this type, the TC would ask the winds aloft for the climbing or descending aircraft. The values were input into the matrix and the spreadsheet would automatically calculate a time adjust from the IP. The TC would then communicate this value back to the airborne players. A positive value indicated to the aircraft to begin their descent that many seconds after IP crossing. A negative value indicated to the aircraft to begin their descent that many seconds before the IP crossing.

During later flights and for simplicity, values were adjusted to be called out in increments of 5 seconds since the aircrew found this solution to be easier to implement while performing the dynamic encounters.

This compromise led to successful climb/descent encounters and the researcher received good data where the matrix was used correctly.

Table 9. ARC Wind Adjust Matrix.



TIME BASED WIND DRIFT ADJUSTMENT FOR KIAS CLIMB/DESCENT ENCOUNTERS

Version: 22Jun2015

Wind Speed (kt)	10		**+**	**later IP crossing**
Wind Direction (deg)	258		**-**	**earlier IP crossing**
Leg Length (min)	3			

L13 Series: Climbing Intruder, 140 KIAS, Initial Alt = 12500 ft

KTAS at Initial Alt = 169

Encounter Angle	Aircraft Heading (deg)	Headwind (kt)	Distance Adjust (nmi)	Ground Speed (kt)	Time Adjust (sec)
A - 0 deg	78	-10.0	0.5	179.0	10.1
C - 45 deg	33	-7.1	0.4	176.1	7.2
D - 90 deg	258	10.0	-0.5	159.0	-11.3

L14 Series: Descending Intruder, 140 KIAS, Initial Alt = 16000 ft

KTAS at Initial Alt = 178.6

Encounter Angle	Aircraft Heading (deg)	Headwind (kt)	Distance Adjust (nmi)	Ground Speed (kt)	Time Adjust (sec)
A - 0 deg	78	-10.0	0.5	188.6	9.5
C - 45 deg	33	-7.1	0.4	185.7	6.9
D - 90 deg	258	10.0	-0.5	168.6	-10.7

L15 Series: Climbing Ownship, 120 KIAS, Initial Alt = 12000 ft

KTAS at Initial Alt = 143.8

Encounter Angle	Aircraft Heading (deg)	Headwind (kt)	Distance Adjust (nmi)	Ground Speed (kt)	Time Adjust (sec)
A - 0 deg	258	10.0	-0.5	133.8	-13.5
C - 45 deg	258	10.0	-0.5	133.8	-13.5
D - 90 deg	348	0.0	0.0	143.8	0.0

L16 Series: Descending Ownship, 120 KIAS, Initial Alt = 16000 ft

KTAS at Initial Alt = 153.3

Encounter Angle	Aircraft Heading (deg)	Headwind (kt)	Distance Adjust (nmi)	Ground Speed (kt)	Time Adjust (sec)
A - 0 deg	258	10.0	-0.5	143.3	-12.6
C - 45 deg	258	10.0	-0.5	143.3	-12.6
D - 90 deg	348	0.0	0.0	153.3	0.0

6.1.2.2 Langley (Stratway+) Pairwise Encounter Geometries

NASA Langley designed self-separation encounters to test and collect data on their self-separation algorithm Stratway+ (now called Detect & AvoID Alerting Logic for Uncrewed Systems (DAIDALUS)) using maneuvering flight test encounters. This series of scenarios was designed to collect data to validate CPA predictions and validate the Stratway+ solution well clear band data during live flight test conditions. The encounters also operated on the edge of the TCAS Resolution Advisory (RA) envelope and ensured Stratway+ guidance provided maneuver bands to operate outside the RA envelope of TCAS II. Most encounters were set at 3,000 ft lateral planned CPA with 400 or 500 ft vertical offset.

All of Langley's encounters required a lateral maneuver and were divided into low-speed ownship level/climb/descent/double blunder (Figure 13, Figure 14, and Figure 15), low-speed intruder multi-ship (Figure 16, Figure 17, and Figure 18), high-speed intruder (Figure 19), and high-speed intruder multi-ship (Figure 20 and Figure 21).

Encounter geometries were flown at 0°, 20°, 45°, 90°, and 135° angle into. The 135° geometry was of particular interest to evaluate the effectiveness of Stratway+ in a late intruder discovery scenario where radar is operating at the edge of its azimuth. Multiple runs were conducted with varying sensor selection.

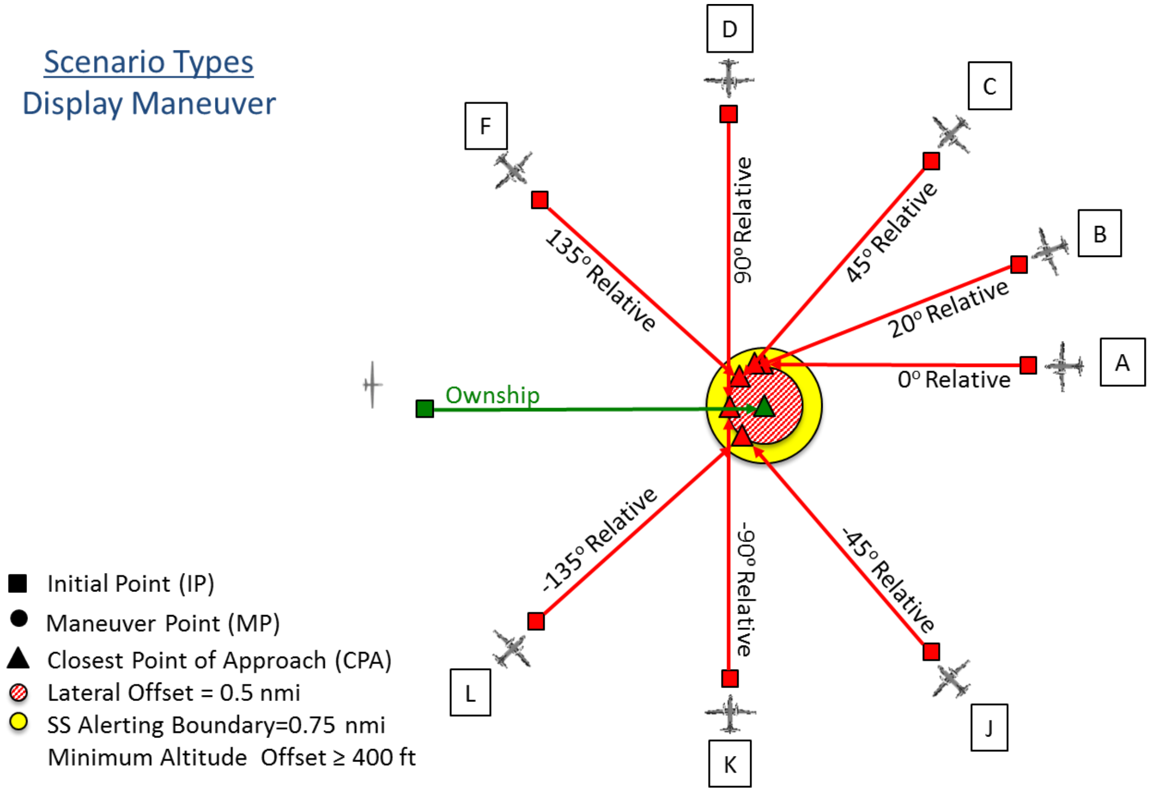


Figure 13. LaRC Pairwise Encounter Angles.

Vertical maneuvers represented further evaluation of the Stratway+ algorithm performance and also engaged the TCAS II RA envelope. Additionally, a double blunder encounter was added for FT3, to gauge the solution space of Stratway+. Climb/descent encounters had a 500 ft vertical separation and required a 1,000 fpm climb or descent.

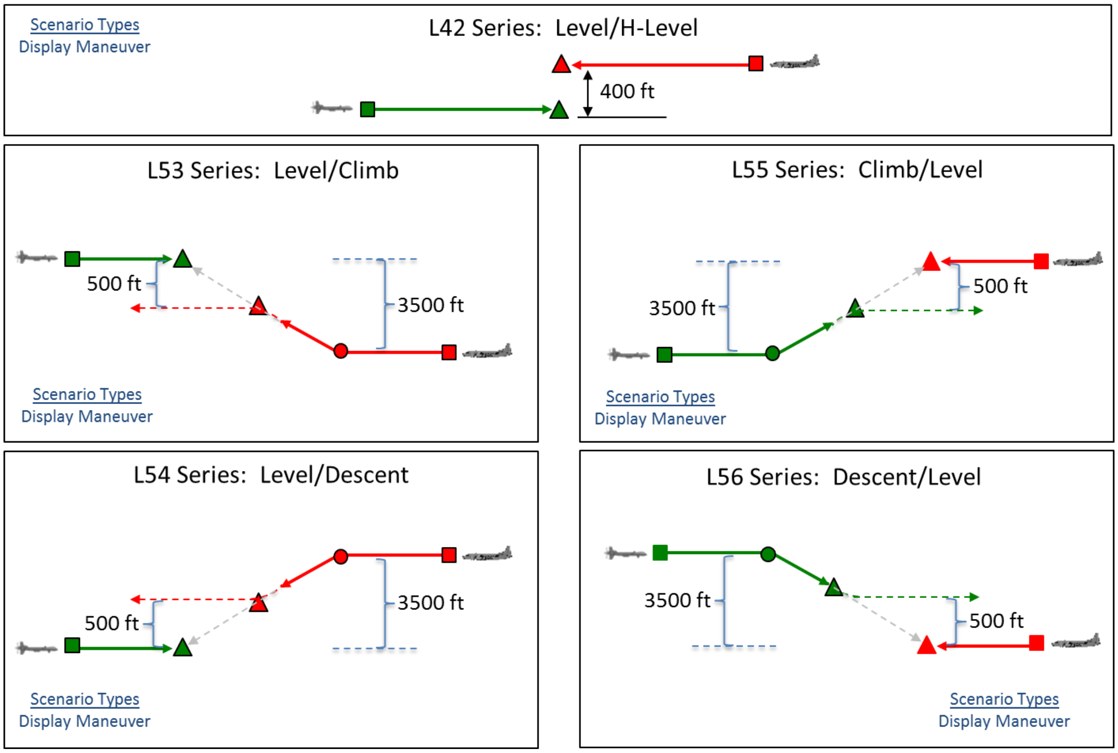


Figure 14. LaRC Pairwise Encounter Vertical Profiles 1.

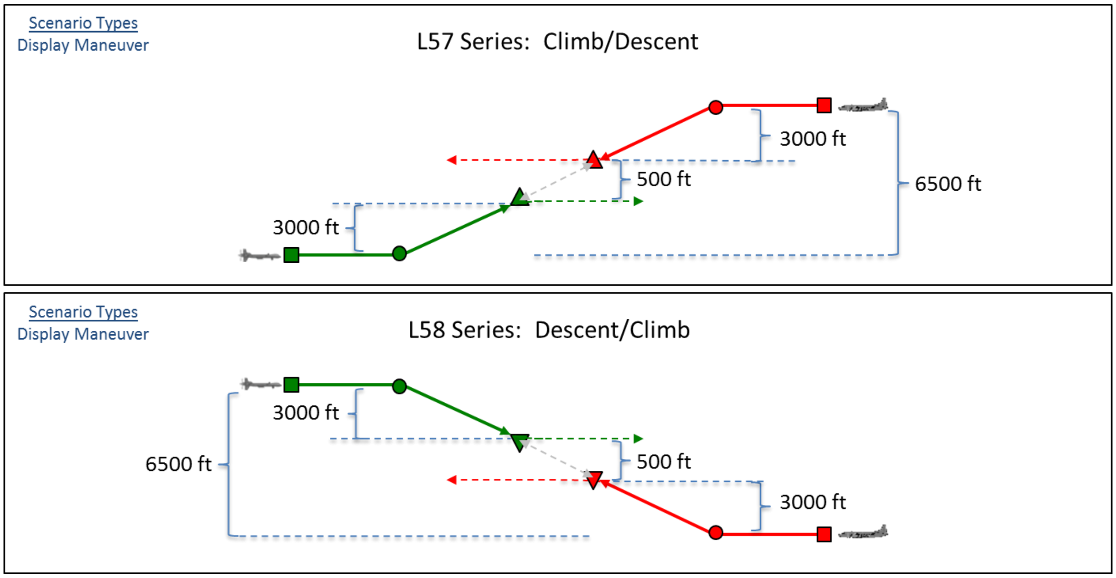


Figure 15. LaRC Pairwise Encounter Vertical Profiles 2.

The multiple intruder series of scenarios were designed to constrain the solution space presented to the pilot and to evaluate the Stratway+ solution well clear band data. Stratway+ was designed to present well clear maneuver space as the union of all threats and a solution space which provides guidance well clear of all intruders. These scenarios increased the complexity of the solution band data presented to the pilot as there were solutions which were constrained to either side of the aircraft's course. For an SAA system to operate effectively in the NAS, it must be able to solve a multiple intruder scenario even though this may be a very low probability scenario.

All multi-ship encounters had a 500 ft vertical separation between ownship and intruder and all were level flight/level maneuvers to introduce the first stage of this complexity which is planned to be continued in FT4.

The multi-ship encounters included several permutations: 0°/0°, 20°/-20°, 0°/45°, 45°/90°, 0°/90°, 0°/135°, and 90°/135° angles into, as depicted in Figure 16, Figure 17, and Figure 18.

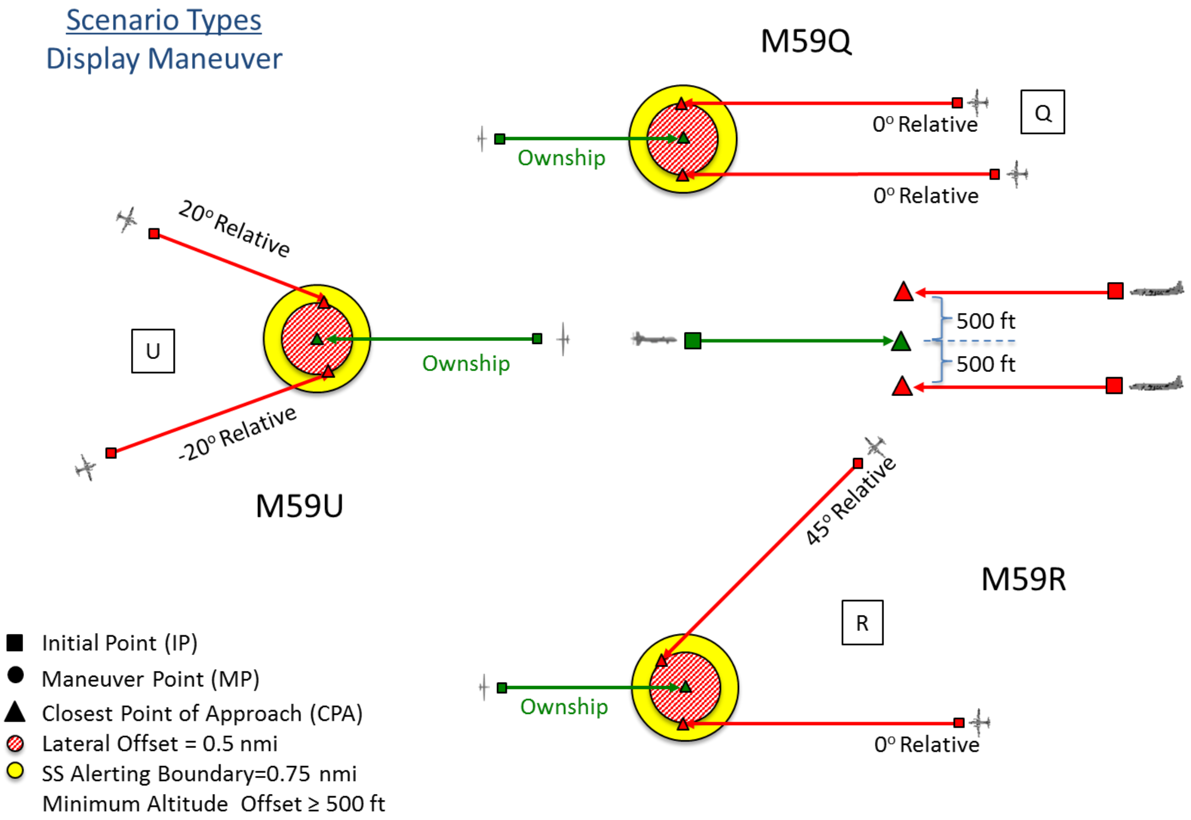


Figure 16. LaRC Pairwise Multi-ship Encounters 1.

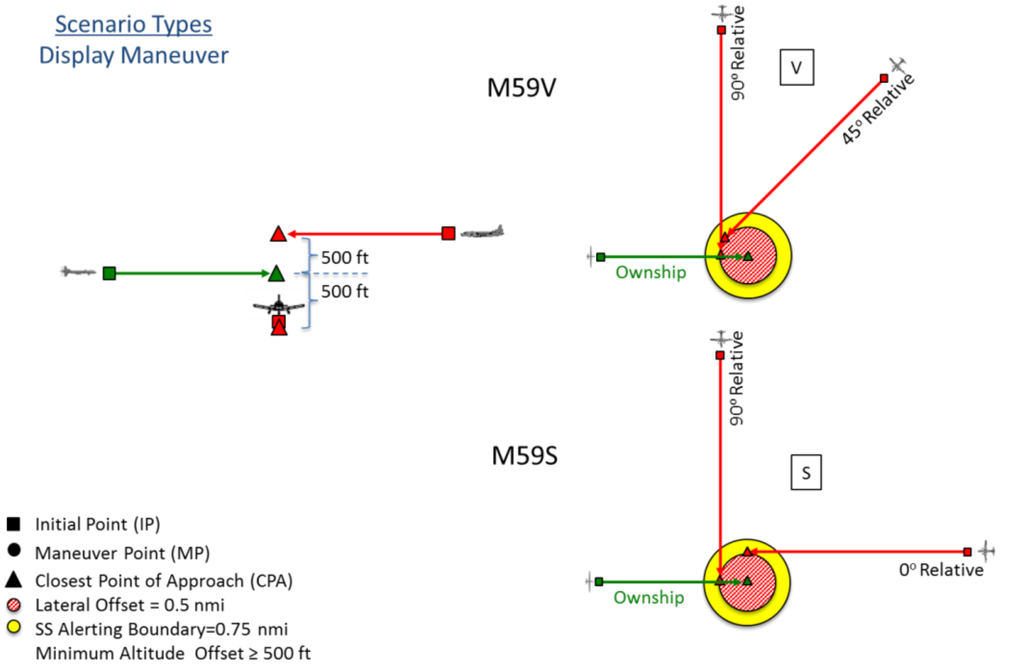


Figure 17. LaRC Pairwise Multi-ship Encounters 2.

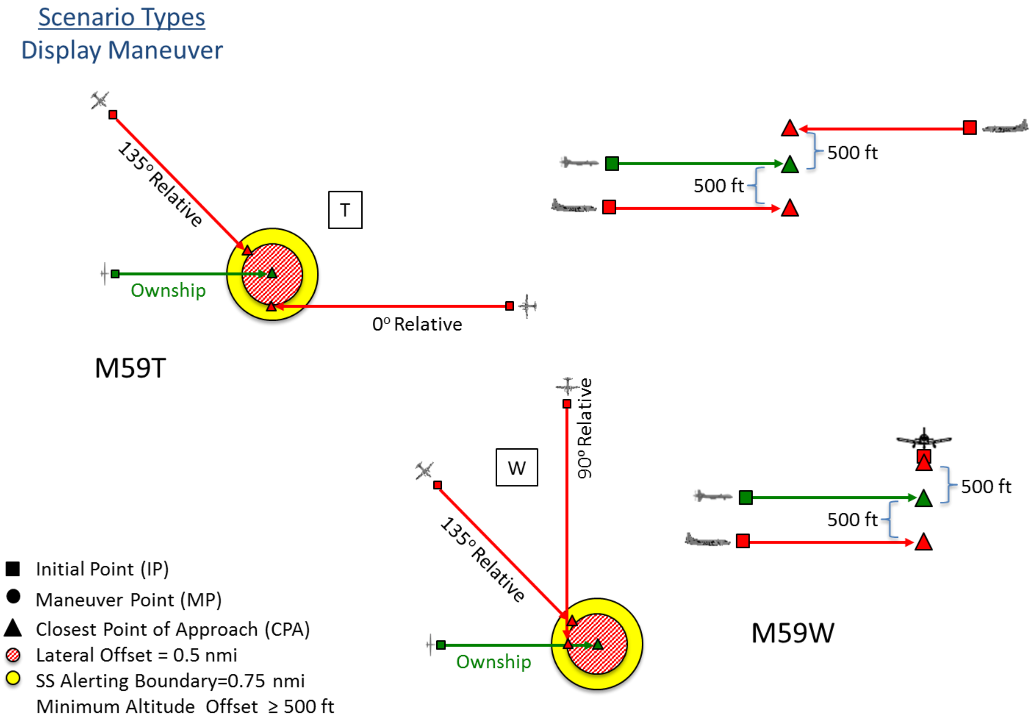


Figure 18. LaRC Pairwise Multi-ship Encounters 3.

The high speed intruder encounter series of scenarios were designed to evaluate the effectiveness of the Stratway+ algorithm when engaging intruders operating at speeds typically encountered with commercial jet transport aircraft transiting below Class A airspace. The increased intruder speed shortened the available pilot reaction time and provided faster closure while the ownship started to execute the maneuver to remain well clear. It was also of interest to evaluate if alerting times effective at lower closure rates with slower intruders would remain sufficient with higher closure speeds.

For Stratway+, high-speed intruder encounters were performed at 400 ft vertical separation and at angles into of 0°, 45°, 90°, and 135° (Figure 19).

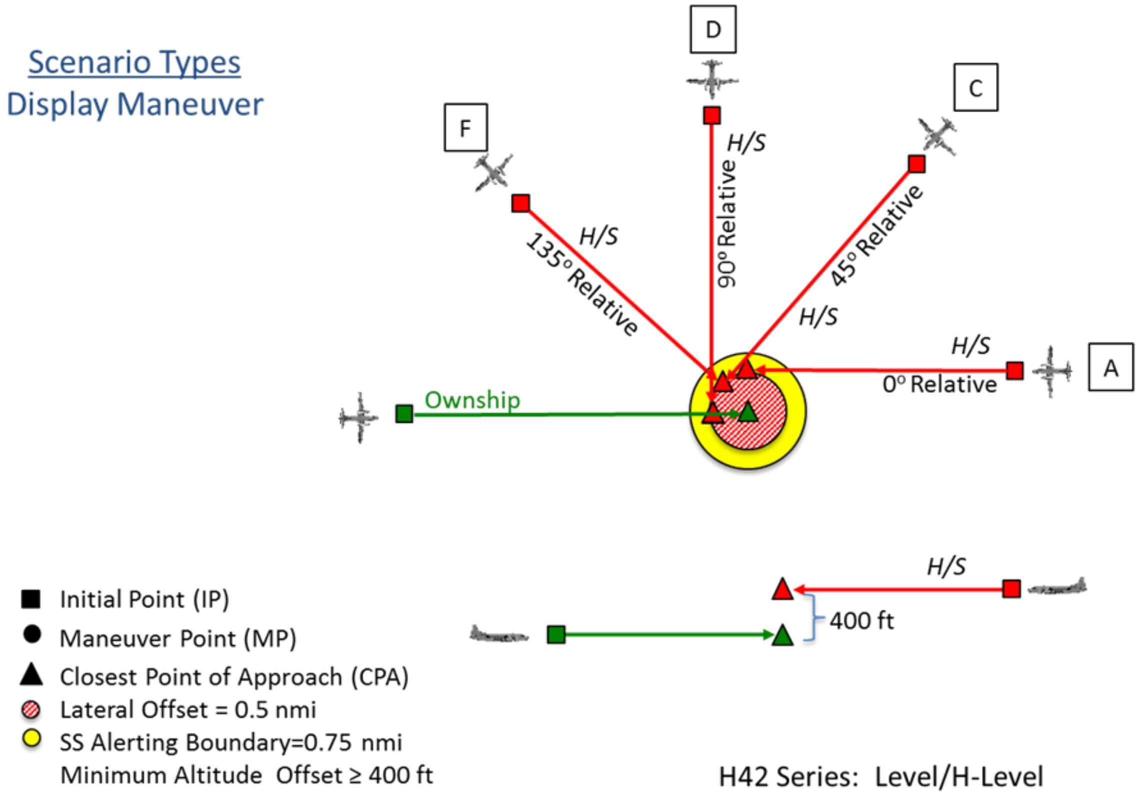


Figure 19. LaRC High Speed Intruder Pairwise Encounter Angles.

Additionally, multi-ship encounters were performed with a high-speed intruder with 500 ft vertical separation. These encounters' permutations include: 0°/45°, 0°/90°, and 0°/135°. Figure 20 and Figure 21 detail the high-speed and low-speed intruder for each.

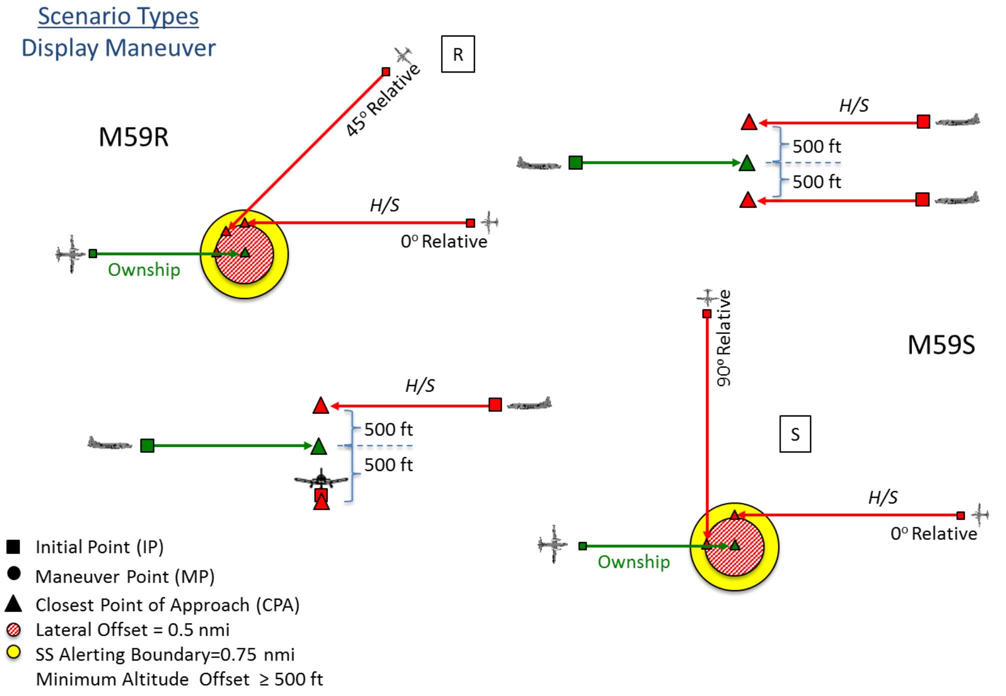


Figure 20. LaRC High-Speed Pairwise Multi-ship Encounters 1.

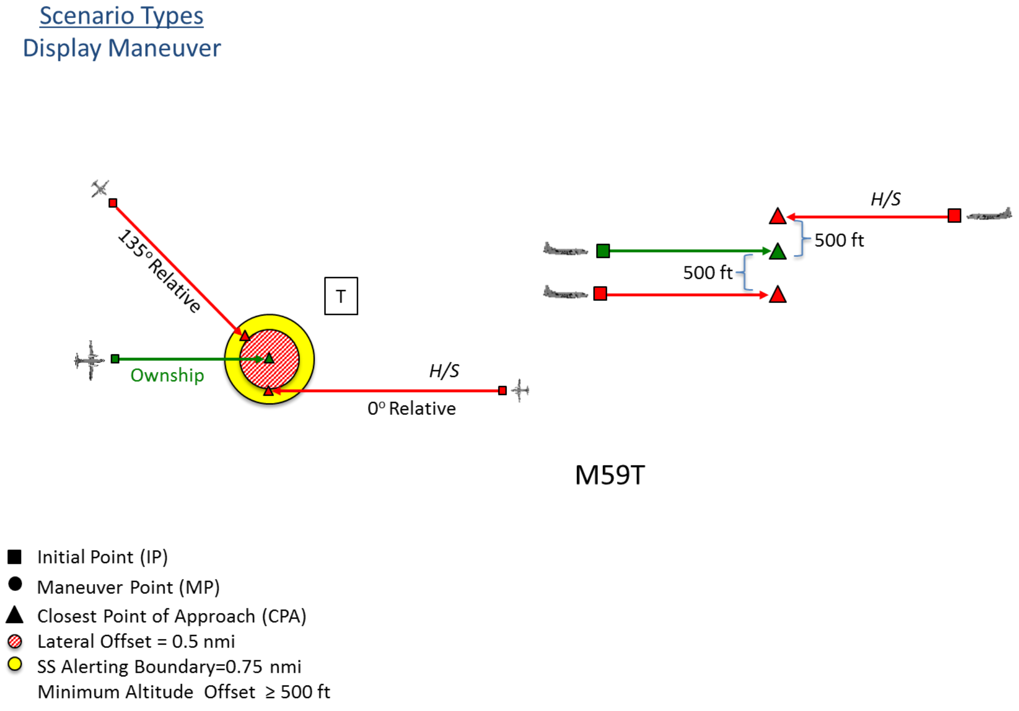


Figure 21. LaRC High-Speed Pairwise Multi-ship Encounters 2.

6.1.2.3 General Atomics CPDS Pairwise Encounter Geometries

The first group of encounters that was provided from General Atomics was to test the self-separation algorithm CPDS.

Five single intruder encounters were provided for CPDS: one at 400 ft vertical separation and four at 500 ft vertical separation. Each of these encounters, all low-speed, had the intruder performing a 45° standard rate turn blunder into the ownship's path.

CPDS also required three multi-ship encounters. Each featured an intruder performing a 45° standard rate turn blunder into the ownship's path, as well as a second intruder constraining the solution space. These encounters were designed with the first intruder at 400 ft above ownship and the second at 500 ft below ownship.

Below is a detailed description of the encounters and their main objectives, as well as a table (Table 10) to summarize/

CPDS Objectives

1. Test the current system / algorithms beyond the situation in which an intruder traverses the various self-separation alert states in the way that would happen if the conflict geometry already exists outside of the temporal limit defining Self-Separation Proximate Traffic (SSPT).

    a. Test the system for situations in which Well Clear is resolved by intruder maneuver while having status CSSA (Corrective Self-Separation Alert) (before Self-Separation Warning Alert (SSWA) occurs).

        i. Loss of well clear is predicted and after the intruder alert status has become Self-Separation Corrective Alert (SSCA), the intruder maneuvers in such a way that well clear will not be violated.

    b. Test the system for situations in which an intruder becomes CSSA due to a maneuver within the 75 -25 seconds to the well clear boundary.

        i. In these situations the predictability in terms of time remaining until SSWA cannot be deduced from the time the yellow band intersected ownship track or the time traffic became SSCA.

    c. Test the system for situations in which the intruder self-separation alert state due to a maneuver cycles from normal to CSSA to normal.

2. Test the current system / algorithms beyond the situation in which an intruder traverses the various self-separation alert states in the way that would happen if the conflict geometry already exists outside of the temporal limit defining SSPT and an additional constraint on the solution space.

    a. Test the system for situations in which well clear is resolved by intruder maneuver while having status CSSA (before SSWA occurs).

        i. Loss of well clear is predicted and after the intruder alert status has become SSCA, the intruder maneuvers in such a way that well clear will not be violated.

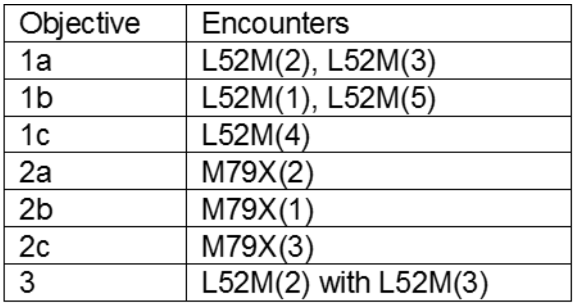
b. Test the system for Situations in which an intruder becomes CSSA due to a maneuver within the 75 -25 seconds to the well clear boundary.

i. In these situations the predictability in terms of time remaining until SSWA cannot be deduced from the time the yellow band intersected ownship track or the time traffic became SSCA.

c. Test the system for situations in which the intruder self-separation alert state due to a maneuver transitions from normal to CSSA to normal.

3. Test the conflict probe function for the most opposite impacts of wind on the same conflict geometry.

Table 10. CPDS Objective and Encounter Overview.



Objective	Encounters
1a	L52M(2), L52M(3)
1b	L52M(1), L52M(5)
1c	L52M(4)
2a	M79X(2)
2b	M79X(1)
2c	M79X(3)
3	L52M(2) with L52M(3)

Desired UAS Pilot Performance

The desired UAS pilot performance in the task of remaining well clear comprises two aspects:

1.Timely detection of all conflicts (future loss of well clear) that will require a maneuver to prevent them from occurring unless the intruder resolves it in time, and appropriate execution of the maneuver (timing and magnitude) that prevents the otherwise occurring well clear violation.

2. A minimum of unnecessary maneuvering. This comprises the prevention of:

a. Situations in which the pilot initiates a maneuver to remain well clear whereas the continuation of the current direction and velocity would not have resulted in a loss of well clear.

b. Situations in which ownship maneuvers due to a temporary predicted loss of well clear outside the 85 second threshold use for the SSPT.

c. Situations in which the maneuver performed by the pilot to remain well clear is far more severe than necessary.

Requirements for CPDS Conflict Geometries (Figure 22)

Given the objectives, the following three types of encounters are needed:

1. To meet objective 1a and 2a: Encounters that are predicted to result in a loss of well clear at a time to CPA larger than 120 seconds, but are resolved by the intruder maneuvering between 75 and (25+TBD margin) seconds to well clear.

2. To meet objective 1b and 2b: Encounters in which the intruder maneuvers within 110 seconds to CPA in such a way that the predicted distance at CPA crosses the well clear dmod threshold.

3. To meet objective 1c and 2c: Encounters that only during the maneuver of the intruder cause a predicted loss of well clear with a time to CPA that always remains above 60 seconds.

- L42M – predicted loss of well clear occurs well within the CSSA alert time. Assess quality of guidance to remain well clear
- L52M (1) – predicted loss of well clear exists but is resolved by intruder before SSWA : Assess quality of guidance to prevent too early / unneeded maneuver + evaluate impact of wind on computed solution space
- L52M (2) – predicted loss of well clear exists but is resolved by intruder before SSWA: Assess quality of guidance to prevent too early / unneeded maneuver + evaluate impact of wind on computed solution space
- L52M (3) – a temporary predicted loss of well clear occurs within the CSSA alert time: Assess quality of guidance to prevent too early / unneeded maneuver
- L52M (4) – a predicted loss of well clear occurs within the SSWA alert time: Assess quality of guidance to remain well clear

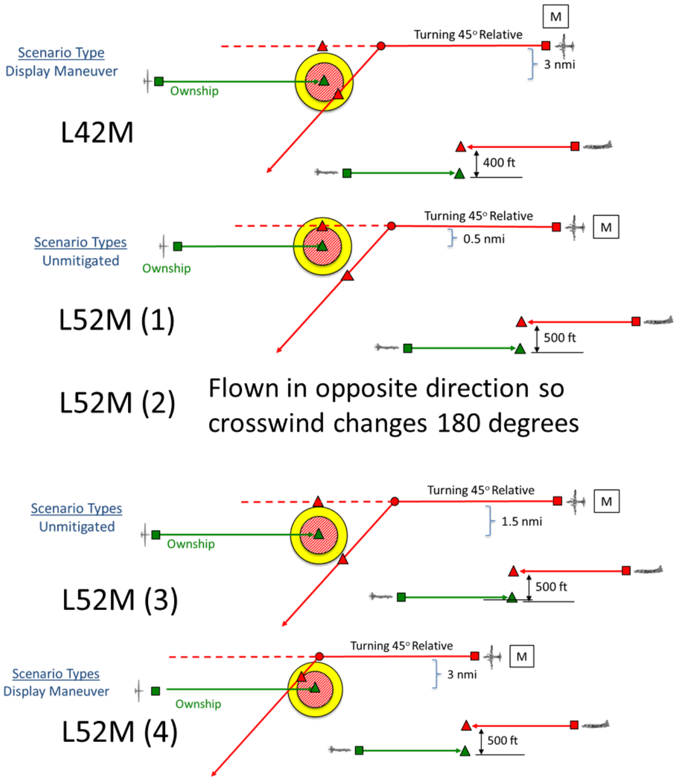


Figure 22. GA-ASI CPDS Pairwise Encounters.

Requirements for Second Intruder (Figure 23)

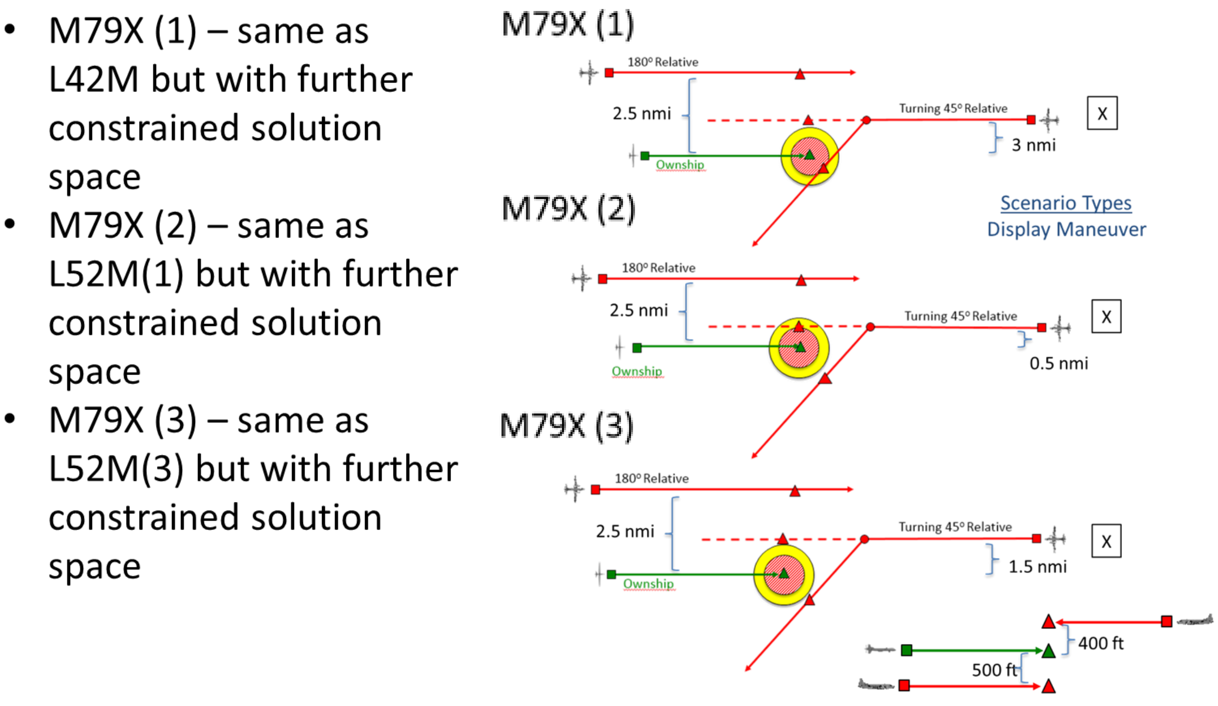
To meet objective 2, the trajectory for the second intruder must meet the following requirements:

4. The second intruder is not used to generate a geometry which causes a predicted loss of well clear.

5. The second intruder is not intended to maneuver, unless necessitated by an (unplanned) maneuver of Ikhana.

6. The second intruder is to be positioned in such a way that during the encounter with intruder 1 (with ‘during’ defined as the period Ikhana being at least from 120 seconds to moment until the predicted loss of well clear with intruder 1 occurs) the intruder will be Preventative Self-Separation Alert (PSSA) (using the proposed update to the PSSA specification).

7. The second intruder is to be positioned in such a way that within 10 seconds of the start of a rate-one turn to the left of Ikhana, the PSSA becomes CSSA.



- M79X (1) – same as L42M but with further constrained solution space
- M79X (2) – same as L52M(1) but with further constrained solution space
- M79X (3) – same as L52M(3) but with further constrained solution space

Figure 23. GA-ASI CPDS Multi-ship Pairwise Encounters.

6.1.2.4 General Atomics Radar Pairwise Encounter Geometries

The next set of encounters provided by General Atomics were designed to test the Engineering Development Module (EDM) DRR.

Test encounter geometries provided by GA-ASI collected data on the performance of the company provided EDM radar system and to help inform the SC-228 radar working group MOPS. The EDM radar performance operating at low altitudes was unknown, thus during FT3, test encounters were planned to explore how the radar performs at low altitude with ground clutter effecting target resolution. Figure 24 depicts the planned low altitude radar flight test geometries. The minimum test altitude was 1,000 ft AGL based off the highest ground feature located along the flight path of the encounter. Both the ownship (Ikhana) and the intruder performed 1,000 ft AGL runs but at no time did an encounter participant operate below 1,000 ft. Eight low altitude radar runs were planned.

All low-altitude encounters performed had a vertical separation of 1,000 ft, 3,000 ft lateral offset, and were all flown head-on.

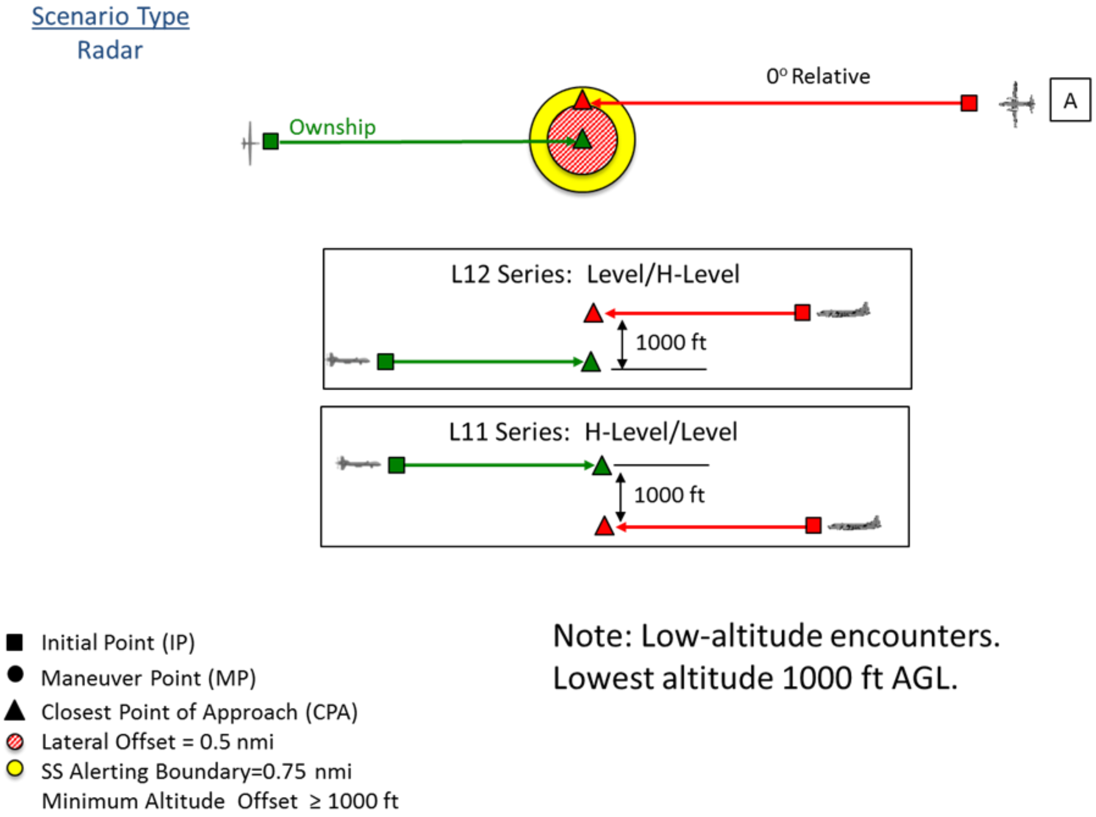


Figure 24. GA-ASI Low-Altitude Pairwise Radar Encounters.

Further, GA-ASI required performance testing of the EDM radar to determine targeting capabilities at the azimuth limits of the radar system (Figure 25), performance of the system of the radar when the intruder is persisting on the beam (Figure 26), as well as, system performance of the radar during intruder acceleration maneuvering called “Zig-Zag” encounter (Figure 27).

The Constant Bearing, Decreasing Range (CBDR) encounters for radar held the intruder at a relative angle of either 110° or 90° bearing to the ownship. These encounters were longer than most, being flown for 5 or 6 minutes to collect further radar data. The encounters included climbs and descents with 500 ft vertical separation, and were performed in level flight with a minimum of 300 ft vertical separation.

The “Zig-Zig” encounter, although depicted with defined angles in the figure, could change during the flight; as long as the constant acceleration was in place, researchers would be receiving the data they required. This encounter was flown with 1,000 ft vertical separation.

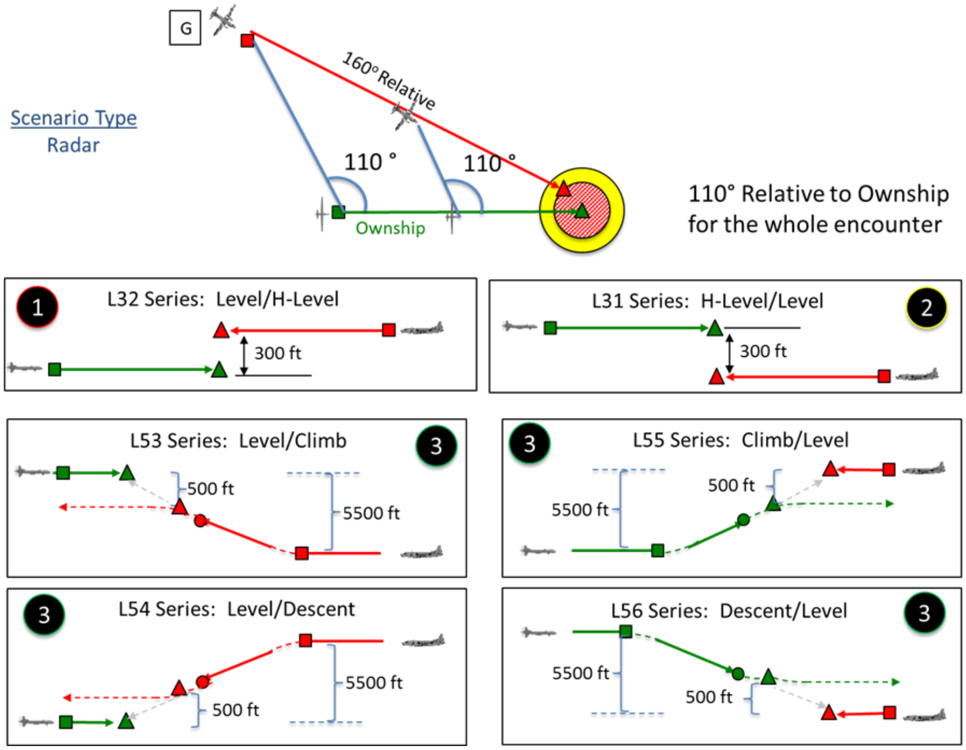


Figure 25. GA-ASI Radar CBDR Pairwise Encounters (110°).

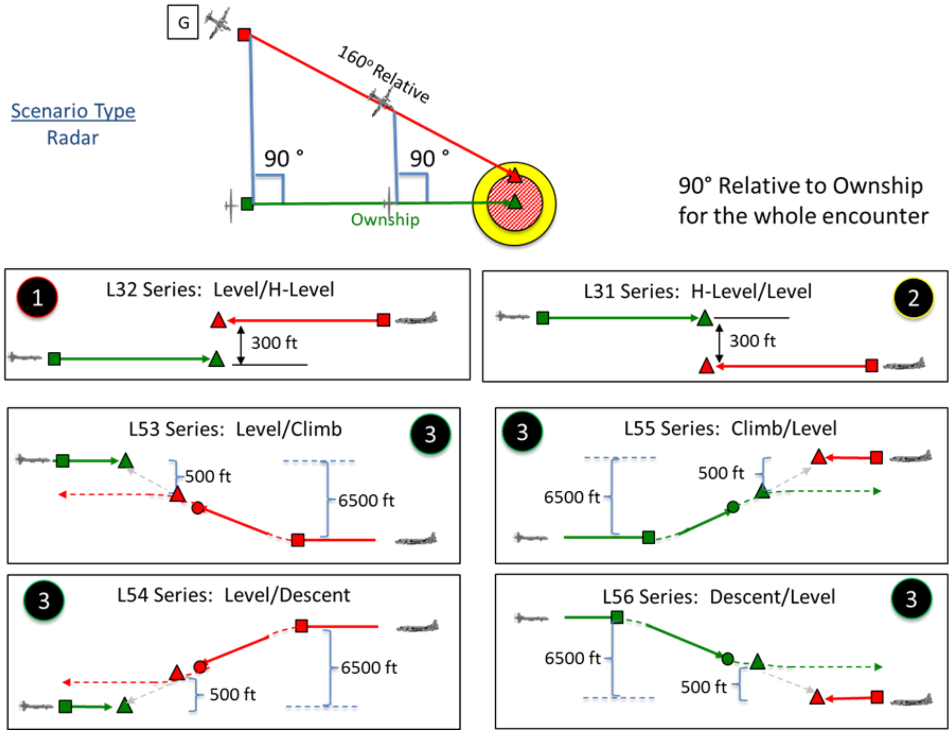


Figure 26. GA-ASI Radar CBDR Pairwise Encounters (90°)

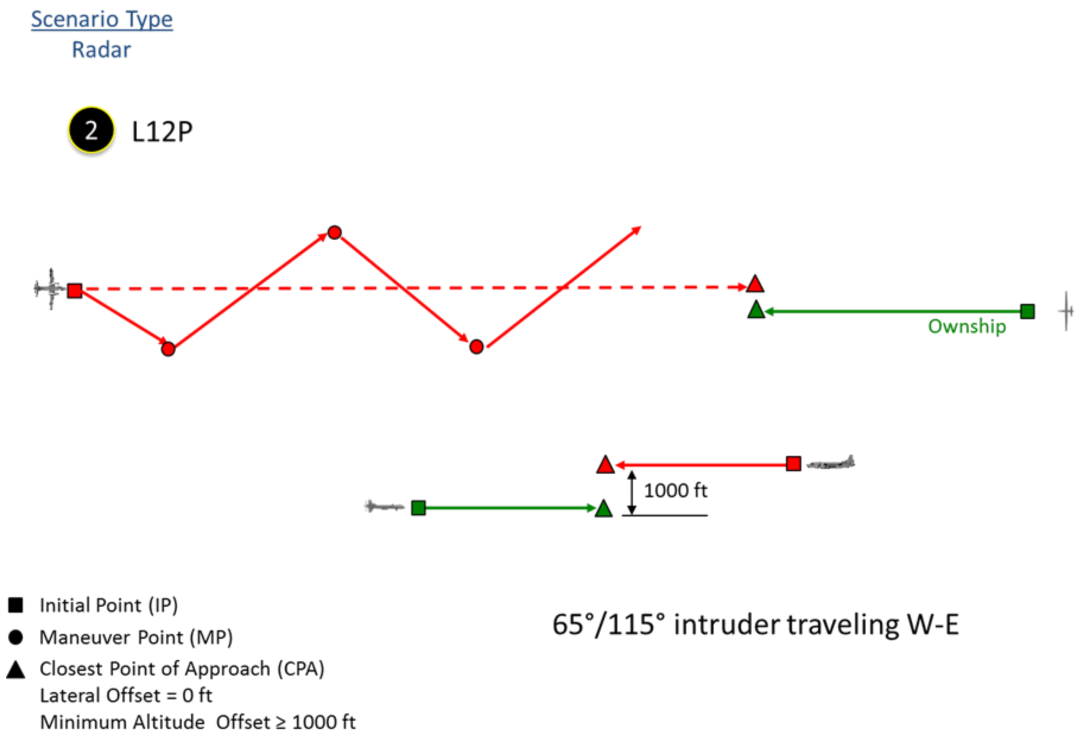


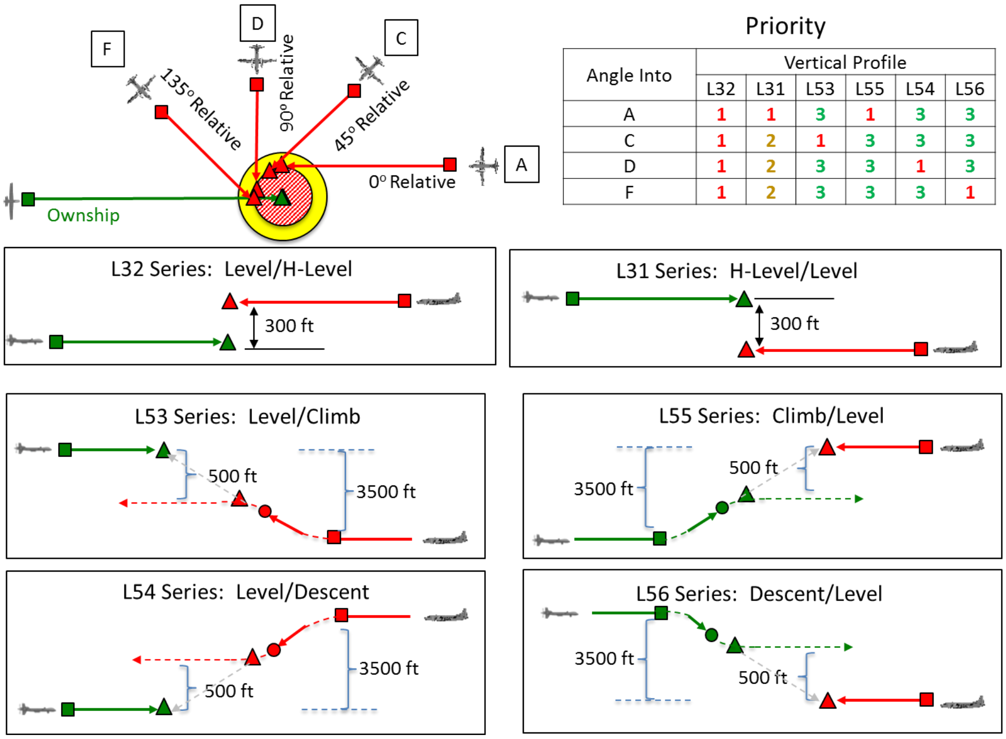
Figure 27. GA-ASI Radar Zig-Zag Pairwise Encounter.

6.1.2.5 General Atomics TCAS Pairwise Encounter Geometries

The Collision Avoidance (CA) performance encounters were designed to test the full range of TCAS Resolution Advisories (i.e., preventive and corrective) and when executed automatically, to test the performance of the vehicle response in a real world environment. Climbing/descending ownship and intruders were included to capture realistic encounter dynamics of the Phase I DAA MOPS definition of "transition". These encounters also served to capture Radar performance data all the way through a CA maneuver.

Figure 28 and Figure 29 depict the mitigated single intruder TCAS runs that were designed to further investigate the threshold between collision avoidance and self-separation boundaries. Runs were planned in a variety of geometries and used a buildup approach starting with 500 ft vertical separation and building up to 300 ft vertical separation encounters, running in advisory and then AUTO (automatic) mode. Vertical blunder type maneuvers were planned with ownship maneuvers, intruder maneuvers, and some encounters where both ownship and intruder perform vertical maneuvering toward each other with a minimum of 500 ft separation at the completion of the encounter.

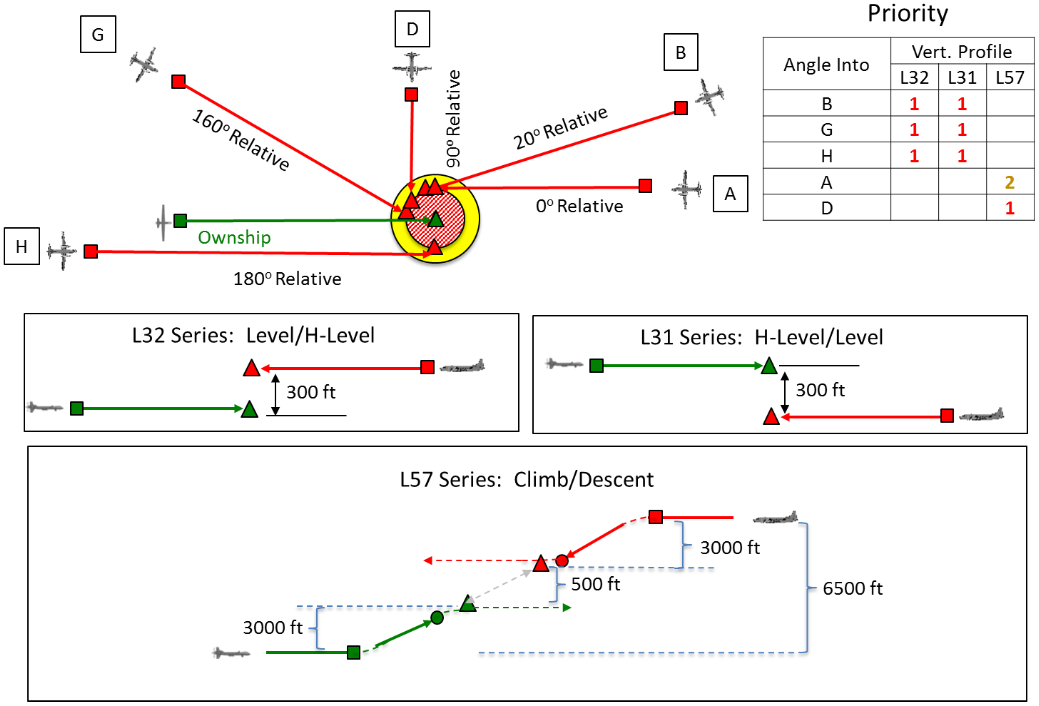
Angles into for these encounters included 0°, 20°, 45°, 90°, 135°, and 160°.



Priority

Angle Into	Vertical Profile					
	L32	L31	L53	L55	L54	L56
A	1	1	3	1	3	3
C	1	2	1	3	3	3
D	1	2	3	3	1	3
F	1	2	3	3	3	1

Figure 28. GA-ASI TCAS Mitigated Pairwise Encounters 1.



Priority

Angle Into	Vert. Profile		
	L32	L31	L57
B	1	1	
G	1	1	
H	1	1	
A			2
D			1

Figure 29. GA-ASI TCAS Mitigated Pairwise Encounters 2.

Several of the CA performance encounters included multiple threat aircraft. While not traditional "multi-threat" encounters as defined by TCAS, these encounters were designed to generate TCAS RA's one at a time or sequentially. These did not directly test the TCAS multi-threat logic, but were designed to test the dynamics of multiple TCAS RAs generated in different directions. The encounter was timed to induce one TCAS RA, followed by a "clear of conflict", followed by another RA in the opposite direction to the first. These encounters were the most complex to be tested during FT3. A buildup approach was used for these encounters starting at 300 ft vertical separation with Ikhana operating in advisory mode. Once the 300 ft encounter had been cleared in advisory, the encounter would be performed in AUTO mode at 300 ft vertical separation. Once 300 ft encounters were cleared, 200 ft vertical separation would be tested using the same buildup approach. As mentioned later in this report, researchers stated on the flight day that advisory 300 ft encounters were enough for their data collection (thus only M67Q and M68Q were performed, and in advisory mode).

The figures below show the planned top view (Figure 31) of these TCAS multi-ship sequential encounters as well as the vertical profile views (Figure 32, Figure 33).

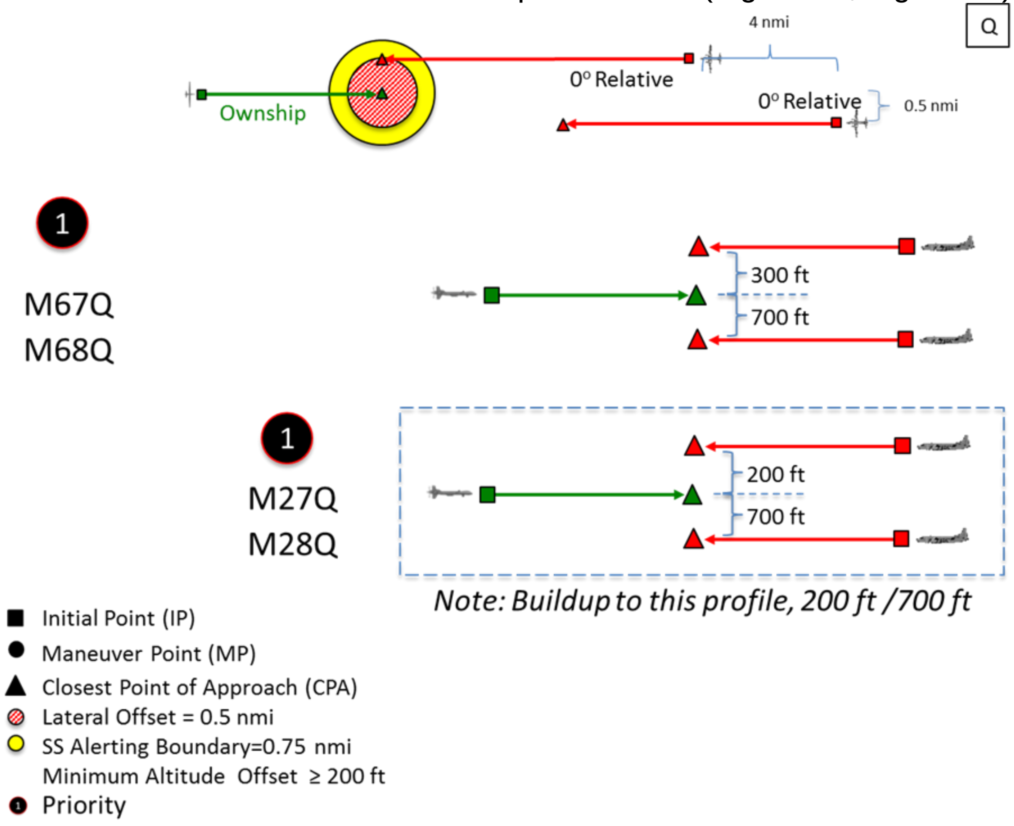


Figure 30. GA-ASI TCAS Sequential Pairwise Encounters.

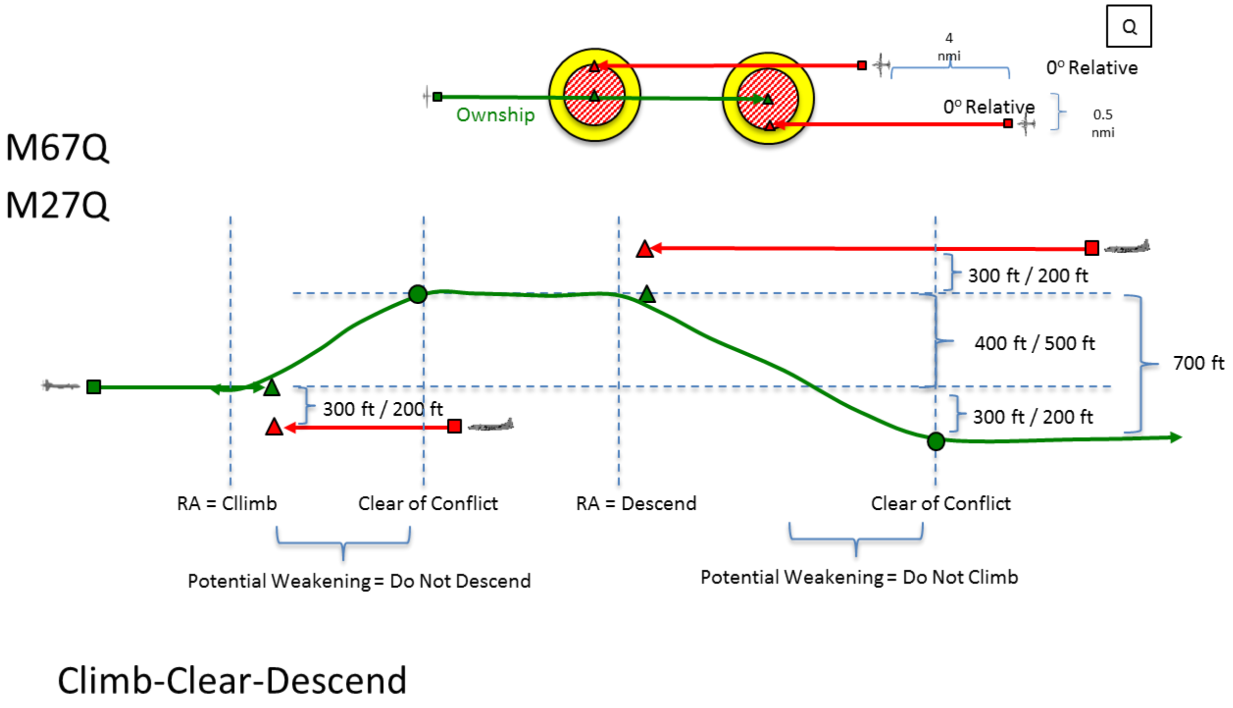


Figure 31. GA-ASI TCAS Sequential Pairwise Encounters Vertical Profile 1.

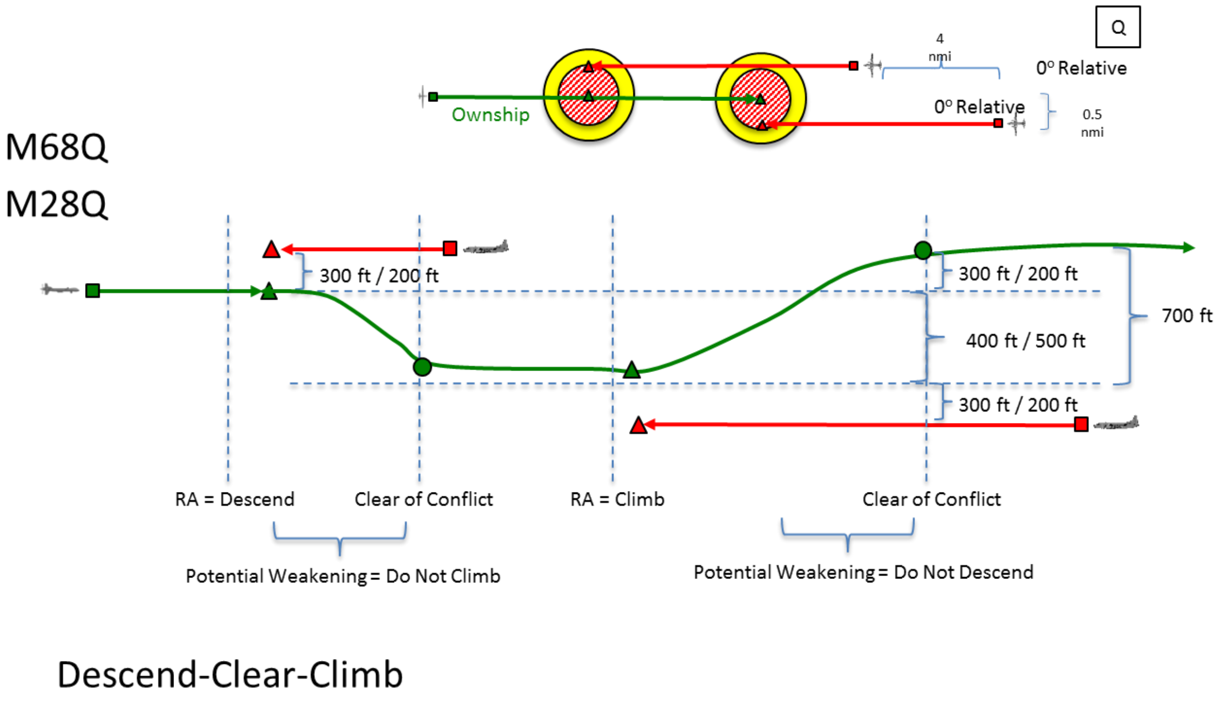


Figure 32. GA-ASI TCAS Sequential Pairwise Encounters Vertical Profile 2.

6.1.3 Configuration 1b High Speed Ownship

Configuration 1b encounters required a high speed ownship (≥210 KGS). Unfortunately due to time constraints and unavailability of the high speed ownship, these encounters were not completed.

6.1.3.1 Ames (AutoResolver) Pairwise Encounter Geometries

Ames required some encounters where a high-speed ownship (210 and 250 KGS) was necessary to test the limits of their algorithm, with a low-speed (130 KGS) intruder. The planned angles into for this configuration were 0°, 45°, 90°, and an overtaking 180°, seen in Figure 33. The high-speed encounters would test the fly-through ("unmitigated") case, as well as maneuvering based on algorithm directive ("display maneuver"). All high-speed ownship scenarios had planned 1,000 ft vertical separation for safety.

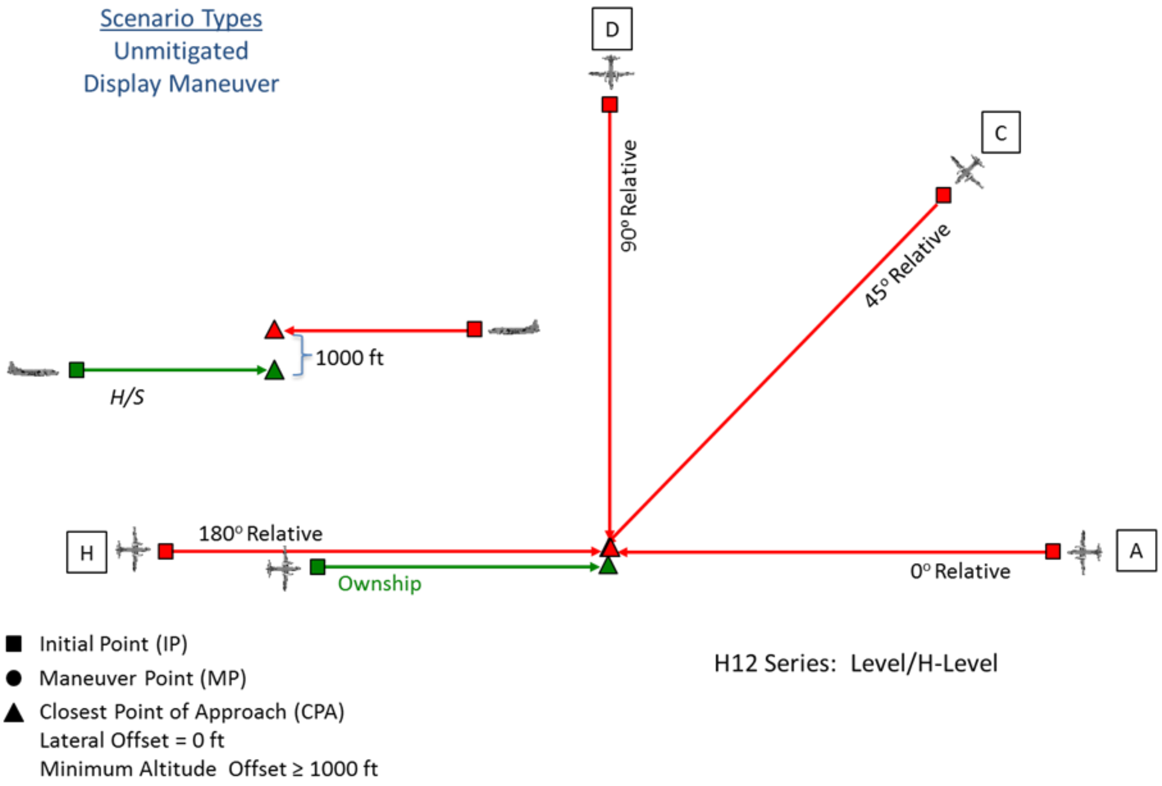


Figure 33. ARC High Speed Ownship Pairwise Encounter Angles.

6.1.4 Matrix Development

A comprehensive flight test matrix was built for FT3 based on researcher requirements and the geometries described in Section 6.1. The encounters were grouped into sections by their encounter angle or type: head-on, 45°, 90°, 135°, high-speed participant, radar, TCAS, and CPDS.

Originally, researchers from Langley Research Center, Ames Research Center, and General Atomics each provided their own set of maneuvers and requirements in

spreadsheet form. These requirements were consolidated into one matrix by personnel at Langley, and this spreadsheet was inherited by Armstrong Flight Research Center and extensively expanded upon. Flight planning by Armstrong began with this version – gathering requirements for the type of maneuver being performed, altitudes, groundspeeds, and sensors.

The purpose of the matrix was to provide a centralized spreadsheet to input all required research geometries, plan their flight in the approved airspace, and populate the flight cards with information and requirements for each encounter.

The matrix was built in Microsoft Excel® and used Visual Basic for Applications (VBA) for calculating pertinent values, such as GPS coordinates in multiple formats. Look-up tables were used on several occasions and especially to populate Ikhana Lost Link mission for each encounter based on CPA. Additionally, Excel was useful for calculating IP to Maneuver Point (MP) and CPA using dead-reckoning equations. Here is a breakdown of the parameters, some of which (**bolded**) are shown in the snapshot Table 11.

- **Scenario Number (S/N)**: The Scenario Number was the most critical number for each encounter. This number served as an identification number for the unique geometry, flight altitude, and other relevant information. Although encounters could have the same scenario name, the number was unique. S/N was used throughout the entire flight test, from the matrix for building the encounter, to encounter prioritization, and finally, for creating the flight test cards.
- **Scenario Name:** Scenario names were based from the Pairwise Encounters Nomenclature (see Section 6.1). The Scenario Name was a quick reference to gain SA on what type of encounter was being performed. Scenario Number could be the same for two or more encounters.
- Scenario Name (Old Nomenclature): Previously, encounters had a naming convention developed from researchers at Ames. Later, this was refined and modified to the version currently being used. The old nomenclature was kept on the matrix as a trace to the original required encounter.
- OWN True Course: True Course of the ownship. This value was used to calculate GPS coordinates (magnetic course was later calculated on the flight cards themselves).
- **Leg time:** Time for the encounter from Commence Exercise (COMEX). Leg time included some buffer for setting up the encounter geometry. Most encounters had 3 minute legs, with some maneuvering encounters (3.25, 3.5), low-altitude radar (3.5), and CBDR radar (5, 6).
- **Min. Vertical Separation:** Smallest vertical separation between ownship and intruder(s) for the encounter at CPA. If the vertical separation necessary for an encounter was ≤500 ft, a lateral offset was required for safety.

- **Angle Into:** Relative angle of the intruder(s) into the ownship for that geometry. More can be seen about the angles into in Section 6.1. This value was used to calculate GPS coordinates.
- **Lateral Offset:** A lateral offset of half a nautical mile (~3,000 ft) was calculated into the geometry for encounters with a vertical separation of ≤500 ft. This was to ensure that if visual was not acquired according to mission rule, there would still be a safety buffer.
- **GS OWN:** Groundspeed of the ownship. Depending on what the researcher wanted to see, the groundspeed varied between encounters. Most low-speed encounters had a GS of 130 or 150 KGS. High-speed encounters required an ownship GS of ≥210 KGS. Groundspeed was preferred for calculations since it did not have to take wind into account. For some encounters, an airspeed of 120 KIAS was required. GPS coordinates were provided for these encounters from the researcher. More discussion can be seen in Section 6.1.2.1.1 on how these unique encounters were performed.
- **GS INT1:** Most encounters required the intruder(s) to fly at 150 or 180 KGS. For high-speed encounters, intruders were required to fly ≥210 KGS. For some encounters, an airspeed of 140 KIAS was required.
- **GS INT2:** Multi-ship encounters only had low-speed intruders for Flight Test Series 3. Thus, all intruder 2 groundspeeds were 150 or 180 KGS.
- **Ownship Initial Altitude:** Altitudes chosen for each encounter took Ikhana and intruder flight performance into consideration, as well as airspace. Encounters began 10K-20K ft MSL. Low-altitude radar encounters took the highest point on the terrain (3,200 ft MSL) and added 1,000 ft for the flight level (thus 4,200 ft MSL).
- **Ownship Vertical Velocity:** For some encounters, a climb or descent was required by the ownship. Rates required were either 1,000 fpm (climb) or -1,000 fpm (descent).
- **Ownship Final Altitude:** Once more, the final altitude was within the block of 10K-20K ft MSL or 1,000 ft above the highest terrain point.
- **Intruder 1 Initial Altitude:** Identical to ownship.
- **Intruder 1 Vertical Velocity:** Identical to ownship.
- **Intruder 1 Final Altitude:** Identical to ownship.
- **Intruder 2 Initial Altitude:** Identical to ownship.
- **Intruder 2 Vertical Velocity:** Identical to ownship.
- **Intruder 2 Final Altitude:** Identical to ownship.
- CPA OWN: The CPA of the ownship was one of its most important parameters. The CPA was the point where the ownship and intruder(s) would be nearest in space for each encounter. Within R-2515, 11 different ownship CPAs were chosen for all Pairwise Encounters. CPAs were chosen to accommodate for the 3 minute legs in the airspace (as well as the longer radar legs), plan sun angles for manned

intruders, and were used to build the Ikhana Lost Link mission. Additionally, the CPAs made it easier to group encounters based on matching CPA when building these geometries in Zeus for SAF SA. Finally, the CPAs were used in a lookup table to build GPS coordinates for all geometries.

- CPA OWN Lat/Lon: Chosen latitude and longitude for each CPA in Decimal Degrees (DD) format. The CPA latitude/longitude was found using FalconView.
- IP OWN: The IP of the ownship was chosen to fit within the airspace and to accommodate for the 3 min (or more) legs. The IP served as the point where the encounter would start and where the aircraft needed to be at the COMEX. Each IP had an identification number based on its coordinates, and for encounters that used the same IP, an identical IP ID was used. The IP was also used on the flight cards for reference on the top view (see Figure 34) and coordinates.
- IP OWN Lat/Lon: Calculated latitude and longitude of the ownship IP from the CPA using dead reckoning equations, in DD format.
- IP OWN DME: Calculated distance in NM from the CPA to the IP for ownship.
- IP INT: The same procedure was used for intruder IP as for ownship.
- IP INT Lat/Lon: Calculated latitude and longitude of the initial point for intruder from the CPA in DD format.
- IP INT DME: Calculated distance in NM from the CPA to the IP for intruder.
- CPA INT: Similar to the ownship, the CPAs for the intruder were also grouped based on GPS coordinates. However, since the geometries for the intruders were built around those for the ownship, there were many more CPAs for intruders than for the ownship (due to various angles into, groundspeeds, etc.).
- CPA INT Lat/Lon: Calculated latitude and longitude of the intruder CPA in DD. The CPA for the intruder was either the same as the ownship (>500 ft vertical separation) or calculated to be 3,000 ft away (≤500 ft vertical separation) from ownship CPA using the relative angle into.
- MP INT: For some encounters, a maneuver was required in the middle of the encounter for the intruder to create a “blunder” type scenario. Maneuver points once again held the same ID if they had the same GPS coordinates.
- MP INT Lat/Lon: Calculated latitude and longitude in DD that the intruder was expected to *begin* their standard rate turn to the CPA.
- **On Condition:** Each encounter required that the aircraft be on condition a certain number of seconds from CPA. This was to ensure that the researcher’s algorithm would have enough time to pick up the aircraft in the encounter for their required conditions (speeds, altitudes, vertical speed, etc.). Most encounters had a requirement of being on condition for 2.5 min (0.5 min for setting up) for the total 3 min legs required.
- **Tolerance:** A carryover from ACAS Xu, the tolerance for an encounter was the number of seconds that each player could be away from the CPA and still achieve

the correct alerting for that encounter. Most encounters had a timing of ±5, 8, or 10 seconds. This value was determined from simulation by the researchers or from previous experience. As time went on, it became apparent that tolerance was not as critical for FT3 (especially for the maneuvering encounters) as much as achieving stable conditions.

- **Ikhana Lost Link**: In the case that Ikhana would lose link, a Lost Link mission was programmed into its flight computer. The Lost Link mission was based on the CPA the ownship would be heading to for that encounter. For this reason, it was critical for the Ikhana team to have all CPAs prior to flight testing so they could build this mission. The Lost Link mission was input in the flight matrix using a lookup table based on CPA.

It's important to note that once all the geometries were built, they were geo-referenced in FalconView to ensure they fit in the assigned airspace or gave enough maneuverability space for all aircraft participants. If they did not, the CPA and GPS coordinates were iterated until a suitable geometry was achieved.

The Flight Test Matrix also included a section showing Scenario Number, priority, and what sensors would be required for that encounter. Encounters for a particular flight day were chosen in this way.

Thus the matrix provided the basic requirements for execution, safety mitigation, and prioritization for planned FT3 scenarios.

Table 11. Pairwise Encounters Scenario Matrix.

	Scenario Number	Scenario Name	Leg Time (minutes)	Min Vertical Separation (ft)	Angle Into	Lateral Offset (ft)	GS OWN	GS INT1	GS INT2	Ownship Initial Altitude	Ownship Vertical Velocity	Ownship Final Altitude	Intruder 1 Initial Altitude	Intruder 1 Vertical Velocity	Intruder 1 Final Altitude	Intruder 2 Initial Altitude	Intruder 2 Vertical Velocity	Intruder 2 Final Altitude	CPA Tolerance (sec)	On Condition (min)	Ikhana Lost Link
Head-On Level/Ascending/Descending	1	L42A	3	400	0	3000	150	180	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 9
	2	L42B	3	400	20	3000	150	180	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 9
	3	L55A	3	500	0	3000	130	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	4	L55B	3	500	20	3000	130	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	5	L56A	3	500	0	3000	130	180	NA	16000	-1000	13000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	6	L56B	3	500	20	3000	130	180	NA	16000	-1000	13000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	7	L57A	3	500	0	3000	130	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	8	M59Q	3	500	0	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 2
	9	M59U	3	500	20/-20	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 5
	10	L13A	3	1000	0	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 9
	11	L13A	3	1000	0	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 9
	12	L14A	3	1000	0	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	13	L14A	3	1000	0	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	14	L15A	3	1000	0	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 9
	15	L15A	3	1000	0	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 9
	16	L16A	3	1000	0	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	17	L16A	3	1000	0	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	18	L12A	3	1000	0	3000	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	19	L52A	3	500	0	3000	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	20	L32A	3	300	0	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
45° Crossing Level/Ascending /Descending Left-to-Right	21	L42C	3	400	45	3000	150	180	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 9
	22	L55C	3	500	45	3000	130	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	23	L56C	3	500	45	3000	130	180	NA	16000	-1000	13000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	24	L57C	3	500	45	3000	130	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	25	L53C	3	500	45	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 9
	26	L54C	3	500	45	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	27	M59R	3	500	0/45	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 8
	28	M59V	3	500	45/90	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 10
	29	L12C	3	1000	45	3000	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 8	2.5	LL WPT 9
	30	L52C	3	500	45	3000	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 8	2.5	LL WPT 9
	31	L32C	3	300	45	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 8	2.5	LL WPT 9
	32	L13C	3	1000	45	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 9
	33	L13C	3	1000	45	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 9
	34	L14C	3	1000	45	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	35	L14C	3	1000	45	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	36	L15C	3	1000	45	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 9
	37	L15C	3	1000	45	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 9
	38	L16C	3	1000	45	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	39	L16C	3	1000	45	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	40	L12M	3.25	1000	45	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	41	L12M	3.25	1000	45	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
90° / 110° Crossing Level/Ascending/Descending Left-to-Right	42	L42D	3	400	90	3000	150	180	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 10
	43	L55D	3	500	90	3000	130	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 10
	44	L56D	3	500	90	3000	130	180	NA	16000	-1000	13000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 10
	45	L57D	3	500	90	3000	130	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 10
	46	L53D	3	500	90	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 10
	47	L54D	3	500	90	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 10
	48	M59S	3	500	0/90	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 9
	49	L12D	3	1000	90	3000	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 5	2.5	LL WPT 10
	50	L52D	3	500	90	3000	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 5	2.5	LL WPT 10
	51	L32D	3	300	90	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 5	2.5	LL WPT 10
	52	L13D	3	1000	90	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 10
	53	L13D	3	1000	90	0	150	140	NA	16500	0	16500	12500	1000	15500	NA	NA	NA	± 10	2.5	LL WPT 10
	54	L14D	3	1000	90	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	55	L14D	3	1000	90	0	150	140	NA	12000	0	12000	16000	-1000	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	56	L15D	3	1000	90	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 10
	57	L15D	3	1000	90	0	120	150	NA	12000	1000	15000	16000	0	16000	NA	NA	NA	± 10	2.5	LL WPT 10
	58	L16D	3	1000	90	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 10
	59	L16D	3	1000	90	0	120	150	NA	16000	-1000	13000	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 10
	60	L12E	3	1000	110	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	61	L12E	3	1000	110	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	62	L12N	3.5	1000	90	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	63	L12N	3.5	1000	90	0	150	180	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
135° Overtaking Level/Ascending /Descending Left-	64	L42F	3	400	135	3000	150	180	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 1
	65	L55F	3	500	135	3000	130	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 1
	66	L56F	3	500	135	3000	130	180	NA	16000	-1000	13000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 1
	67	L57F	3	500	135	3000	130	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 1
	68	L53F	3	500	135	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 1
	69	L54F	3	500	135	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 1
	70	M59T	3	500	0/135	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 6
	71	M59W	3	500	90/135	3000	150	180	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 10
High Speed Level Encounters 0/45/90/135/180	72	H42A	3	400	0	3000	150	300	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 2
	73	H42C	3	400	45	3000	150	300	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 10
	74	H42D	3	400	90	3000	150	300	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 10
	75	H42F	3	400	135	3000	150	300	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 1
	76	M59R	3	500	0/45	3000	150	300	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 6
	77	M59S	3	500	0/90	3000	150	300	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 6
	78	M59T	3	500	0/135	3000	150	300	150	13000	0	13000	13500	0	13500	12500	0	12500	± 10	2.5	LL WPT 6
	79	H12A	3	1000	0	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 6
	80	H12A	3	1000	0	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 6
	81	H12A	3	1000	0	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 6
	82	H12A	3	1000	0	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 6
	83	H12A	3	1000	0	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	84	H12A	3	1000	0	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	85	H12A	3	1000	0	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9

High Speed Level Encounters 0/45/90/135/180	86	H12A	3	1000	0	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	87	H12C	3	1000	45	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	88	H12C	3	1000	45	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	89	H12C	3	1000	45	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	90	H12C	3	1000	45	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	91	H12C	3	1000	45	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	92	H12C	3	1000	45	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	93	H12C	3	1000	45	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	94	H12C	3	1000	45	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	95	H12D	3	1000	90	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	96	H12D	3	1000	90	0	130	210	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	97	H12D	3	1000	90	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	98	H12D	3	1000	90	0	130	250	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 10
	99	H12D	3	1000	90	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	100	H12D	3	1000	90	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	101	H12D	3	1000	90	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	102	H12D	3	1000	90	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	103	H12H	3	1000	180	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	104	(Deleted)	3	1000	180	0	210	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA			LL WPT 9
	105	H12H	3	1000	180	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	2.5	LL WPT 9
	106	(Deleted)	3	1000	180	0	250	130	NA	12000	0	12000	13000	0	13000	NA	NA	NA			LL WPT 9
Radar Runs for GA	107	L12A (1)	3.5	1000	0	3000	150	180	NA	4200	0	4200	5200	0	5200	NA	NA	NA	± 10	3	LL WPT 7
	108	L12A (2)	3.5	1000	0	3000	150	180	NA	5200	0	5200	6200	0	6200	NA	NA	NA	± 10	3	LL WPT 3
	109	L12A (3)	3.5	1000	0	3000	150	180	NA	6200	0	6200	7200	0	7200	NA	NA	NA	± 10	3	LL WPT 7
	110	L12A (4)	3.5	1000	0	3000	150	180	NA	7200	0	7200	8200	0	8200	NA	NA	NA	± 10	3	LL WPT 3
	111	L11A (1)	3.5	1000	0	3000	150	180	NA	5200	0	5200	4200	0	4200	NA	NA	NA	± 10	3	LL WPT 7
	112	L11A (2)	3.5	1000	0	3000	150	180	NA	6200	0	6200	5200	0	5200	NA	NA	NA	± 10	3	LL WPT 3
	113	L11A (3)	3.5	1000	0	3000	150	180	NA	7200	0	7200	6200	0	6200	NA	NA	NA	± 10	3	LL WPT 7
	114	L11A (4)	3.5	1000	0	3000	150	180	NA	8200	0	8200	7200	0	7200	NA	NA	NA	± 10	3	LL WPT 3
	115	L32G (110)	5	300	160	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	3.5	LL WPT 1
	116	L31G (110)	5	300	160	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	3.5	LL WPT 1
	117	L53G (110)	5	500	160	3000	150	180	NA	16500	0	16500	11000	1000	16000	NA	NA	NA	± 10	3.5	LL WPT 1
	118	L55G (110)	5	500	160	3000	150	180	NA	11000	1000	16000	16500	0	16500	NA	NA	NA	± 10	3.5	LL WPT 1
	119	L54G (110)	5	500	160	3000	150	180	NA	11000	0	11000	16500	-1000	11500	NA	NA	NA	± 10	3.5	LL WPT 1
	120	L56G (110)	5	500	160	3000	150	180	NA	16500	-1000	11500	11000	0	11000	NA	NA	NA	± 10	3.5	LL WPT 1
	121	L32G (90)	6	300	160	3000	150	160	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	3.5	LL WPT 1
	122	L31G (90)	6	300	160	3000	150	160	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	3.5	LL WPT 1
	123	L53G (90)	6	500	160	3000	150	160	NA	17500	0	17500	11000	1000	17000	NA	NA	NA	± 10	3.5	LL WPT 1
	124	L55G (90)	6	500	160	3000	150	160	NA	11000	1000	17000	17500	0	17500	NA	NA	NA	± 10	3.5	LL WPT 1
	125	L54G (90)	6	500	160	3000	150	160	NA	11000	0	11000	17500	-1000	11500	NA	NA	NA	± 10	3.5	LL WPT 1
	126	L56G (90)	6	500	160	3000	150	160	NA	17500	-1000	11500	11000	0	11000	NA	NA	NA	± 10	3.5	LL WPT 1
	127	L12P	5	1000	65/115	0	150	150	NA	12000	0	12000	13000	0	13000	NA	NA	NA	± 10	3.5	LL WPT 8
TCAS Mitigated Runs for GA	128	L32A	3	300	0	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
	129	L32C	3	300	45	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
	130	L32D	3	300	90	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 10
	131	L32F	3	300	135	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 1
	132	L31A	3	300	0	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	133	L31C	3	300	45	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	134	L31D	3	300	90	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 10
	135	L31F	3	300	135	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 1
	136	L53A	3	500	0	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 9
	137	L53C	3	500	45	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 9
	138	L53D	3	500	90	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 10
	139	L53F	3	500	135	3000	150	180	NA	14500	0	14500	11000	1000	14000	NA	NA	NA	± 10	2.5	LL WPT 1
	140	L55A	3	500	0	3000	150	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	141	L55C	3	500	45	3000	150	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	142	L55D	3	500	90	3000	150	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 10
	143	L55F	3	500	135	3000	150	180	NA	11000	1000	14000	14500	0	14500	NA	NA	NA	± 10	2.5	LL WPT 1
	144	L54A	3	500	0	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	145	L54C	3	500	45	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 9
	146	L54D	3	500	90	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 10
	147	L54F	3	500	135	3000	150	180	NA	12000	0	12000	15500	-1000	12500	NA	NA	NA	± 10	2.5	LL WPT 1
	148	L56A	3	500	0	3000	150	180	NA	15500	-1000	12500	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	149	L56C	3	500	45	3000	150	180	NA	15500	-1000	12500	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	150	L56D	3	500	90	3000	150	180	NA	15500	-1000	12500	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 10
	151	L56F	3	500	135	3000	150	180	NA	15500	-1000	12500	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 1
	152	L32B	3	300	20	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
	153	L32G	3	300	160	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
	154	L32H	3	300	180	3000	150	180	NA	12000	0	12000	12300	0	12300	NA	NA	NA	± 10	2.5	LL WPT 9
	155	L31B	3	300	20	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	156	L31G	3	300	160	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	157	L31H	3	300	180	3000	150	180	NA	12300	0	12300	12000	0	12000	NA	NA	NA	± 10	2.5	LL WPT 9
	158	L57A	3	500	0	3000	150	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 9
	159	L57D	3	500	90	3000	150	180	NA	11000	1000	14000	17500	-1000	14500	NA	NA	NA	± 10	2.5	LL WPT 10
	160	M67Q	3.1	300/700	0	3000	150	180	180	13300/13700	1000/-1000	13700/13000	14000	0	14000	13000	0	13000	± 10	2.5	LL WPT 6
	161	M68Q	3.1	300/700	0	3000	150	180	180	13700/13300	-1000/1000	13300/14000	14000	0	14000	13000	0	13000	± 10	2.5	LL WPT 6
	162	M27Q	3.2	200/700	0	3000	150	180	180	13200/13700	1000/-1000	13700/13000	13900	0	13900	13000	0	13000	± 10	2.5	LL WPT 6
	163	M28Q	3.2	200/700	0	3000	150	180	180	13700/13200	-1000/1000	13200/13900	13900	0	13900	13000	0	13000	± 10	2.5	LL WPT 6
CPDS Runs for GA	164	L42M	3	400	45	3000	150	160	NA	12000	0	12000	12400	0	12400	NA	NA	NA	± 10	2.5	LL WPT 8
	165	L52M (1)	3	500	45	14000	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 8
	166	L52M (2)	3	500	45	14000	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 2
	167	L52M (3)	3	500	45	12150	150	180	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 8
	168	L52M (4)	3	500	45	3000	150	160	NA	12000	0	12000	12500	0	12500	NA	NA	NA	± 10	2.5	LL WPT 8
	169	M79X (1)	3	400/500	45	3000	150	160	180	13000	0	13000	13400	0	13400	12500	0	12500	± 10	2.5	LL WPT 6
	170	M79X (2)	3	400/500	45	14000	150	180	180	13000	0	13000	13400	0	13400	12500	0	12500	± 10	2.5	LL WPT 6
	171	M79X (3)	3	400/500	45	12150	150	180	180	13000	0	13000	13400	0	13400	12500	0	12500	± 10	2.5	LL WPT 6

Algorithm	**Type**	**Special Cases**
JADEM	Multiship	KIAS
Stratway+		Low Altitude
CPDS		High-Speed O/S

6.1.5 Flight Card Description

Flight cards for Configuration 1 were developed based on cards created during ACAS Xu by personnel from Massachusetts Institute of Technology (MIT) Lincoln Laboratory. These flight cards, which were atypical, were used for similar type encounters during that flight test.

Due to the success of that program and card clarity, a similar format was used for Flight Test Series 3. With the collaborative effort of FT3 Ikhana Operations, Armstrong IT&E Operations, and researcher input, the product was designed to provide a simple, easy-to-use, and easily modifiable card that met researcher requirements for mission success. The cards also presented a familiar format to that of an instrument approach plate which enabled the aircrew to quickly determine test parameters and critical flight information.

An additional factor that was taken into the design was that of Human Factors: throughout all scenario cards for Configuration 1, a standard color format was selected:

- Ownship and middle altitude aircraft was **green**
- Intruder 1 and higher altitude aircraft was **red**
- Intruder 2 and lower altitude aircraft was **blue**

This color scheme was chosen for its quick SA for the customer and easy cockpit use. The issue of color-blindness was considered, but since all of the test pilots had been through physical examination that checks for color blindness, it was a non-factor.

The flight cards were a tremendous success, both visually and for being highly informative and practical. Kudos were received from Ikhana, intruder aircrew, and industry stakeholders alike.

6.1.5.1 Production

Flight Cards were built in Excel and were directly linked to the Flight Test Matrix. The matrix had the capability of auto-populating much of the information for the card based on look-up tables from the scenario number: IP/CPA names and coordinates, altitudes, headings, velocities, distances, groundspeeds, lost link mission for Ikhana, on-condition timing, and CPA tolerances. Manual input was required for the sensor selection, deconfliction altitudes, notes, and abort procedures.

The top down view is a geo-referenced image that was built in FalconView, and furthermore auto-generated by a program called Excel2FV. Excel2FV plotted and created FalconView files automatically by taking user-grouped identical geometries from Excel as an input. Once the geometries/files were created, IP/CPA icons were manually added onto the FalconView files and a normal image file was created. These image files were moved to Microsoft PowerPoint® and aircraft icons added. The top-down views were then pasted onto the flight cards.

Vertical profiles were built in PowerPoint. Groups of similar encounters were easily pasted onto the flight cards.

The cards were designed to fit on an 8.5”x11” sheet of paper, with one half dedicated to ownship and the other to intruder. This allowed users to either cut the deck in half or fold their card to the one of interest. For multi-ship, an additional sheet of standard size paper was required.

Since there were over 200 test points, over 200 unique flight cards were created in this fashion for Configuration 1. Each flight card had its own spreadsheet and the cards were later converted into PDF, packaged into a document for that particular flight day, and distributed in soft- and hard-copy form to all FT3 participants.

6.1.5.2 Breakdown

Figure 34 and Figure 35 below show an example of the Flight Cards used for Configuration 1. The following is a breakdown of card sections.

6.1.5.2.1 Ownship

Ownship cards showed the aircraft route of flight as green. Here are the main cards sections, listed alphabetically, and a brief explanation for each:

- **Abort Alt:** This altitude is defined as the safe escape altitude the aircraft were expected to immediately hold and maintain if an abort is called. For the ownship, abort altitudes normally required no maneuver other than to remain level, or during climbs and descents to level off at the identified level off altitude. The encounter would end if an abort was called. The abort altitude provided each participating aircraft at least 1,000 ft of vertical separation.
- **Abort Heading:** Heading to maintain or fly to in the case of an abort. The encounter would end if an abort was called.
- **Aircraft Role:** This section specified whether the aircraft was Ownship, Intruder 1, or Intruder 2.
- **Aircraft:** Callsign of the aircraft for that test card.
- **Card Number:** The card numbers were chosen the day of flight and represented the flight order.
- **Card Type Version:** Cards went through several iterations before reaching their final version (9). The reason for versions was to keep track of all format updates made during the production of cards. Changes from version to version included additional information added to top view, notes section added, updated encounter instructions, etc.
- **CPA:** The CPA was the predicted point where the ownship and intruder(s) would be closest vertically and laterally. For encounters less than 500 ft in separation, this CPA had a 0.5 NM lateral offset. Each CPA had a unique number (i.e. CPA7) and if GPS coordinates for a CPA repeated, the same CPA number would be used.

The coordinates listed were in two forms for use by the Ikhana operators and intruders. CPAs were denoted by a triangle symbol.

- **COMEX:** Each encounter had a COMEX – a time where all participants needed to be positioned at the IP or ready to commence the run.
- **Configuration:** Flight Test Series Configuration. For Configuration 1, two types existed: 1a (low-speed ownship) and 1b (high-speed ownship).
- **CPA Tolerance:** Tolerance was based on requirements from the researchers' simulations. The tolerance required the aircraft to be at the CPA within that number of seconds from each other. Typically the value was ±5, 8, or 10 seconds.
- **Deconfliction Alt:** Altitude aircraft would fly in between test points.
- **Encounter Instructions:** These instructions were radio instructions as well as what to expect from the TC. The instructions also showed at least how much time the aircraft needed to be on condition for that run (step 3). On condition was typically 2.5, 3, or 3.5 min depending on the encounter length.
- **Final Alt:** Expected altitude at the CPA.
- **Groundspeed:** Encounter horizontal velocity parameter for all participating aircraft. For Flight Test Series 3, all speeds were constant (no acceleration). As mentioned, some encounters required airspeed – this was specified on those unique cards and highlighted.
- **Ikhana Lost Link:** Each Ikhana CPA had a single waypoint on a Lost Link Mission that the aircraft would go to in the event of this condition.
- **IP:** The IP was the point in space where the aircraft would need to be for COMEX. Each IP had a unique number (i.e. IP16) and if GPS coordinates for an IP repeated, the same IP number would be used. The coordinates listed were in two forms for use by the Ikhana operators and intruders. IPs were denoted by a square symbol.
- **IP to CPA in NM:** The distance between IP and CPA in nautical miles, for reference.
- **Magnetic Course:** Expected Magnetic Course (MC) between the IP to CPA.
- **O/S Pilot Instructions:** Instructions specific to that geometry/SUT that the pilot had to execute.
- **Profile View:** Side view of the encounters, showing initial and final altitudes at IP and CPA respectively, abort procedures (dashed lines), and vertical separation.
- **Scenario Name:** This name was a quick reference to the type of encounter being executed, using the Scenario Nomenclature. For more information, see Figure 8.
- **Scenario Number:** This number was a unique to each encounter. In fact, it carried through from the Flight Test Matrix and was critical to building the cards based on lookup tables. For a full list of scenario numbers, see Table 11.
- **Sensor Selected:** The Ikhana had several sensors that could be selected or deselected based on researcher requirements for that encounter. "Selected"

meant that track data was being fed into the SUT. ADS-B, Radar, or TCAS data could be selected, as well as “Tracker”, which would fuse all three.

- **Start Alt:** Aircraft starting altitude at the IP.
- **SUT:** Display for that particular encounter. The choices were AutoResolver 1 or 2, Stratway+, or CPDS.
- **TCAS Mode:** The TCAS mode would be selected depending on if the Ikhana should perform a maneuver based on TCAS alerts. “OFF” meant that no TCAS alerts would be received, “Advisory” would show the alerts to the pilot and let them decide whether to maneuver based on the guidance, and “AUTO” would enable the flight control computer to automatically take control and maneuver based on TCAS alerts.
- **Time Adjust:** The time adjust was useful for airspeed encounters. See Section 6.1.2.1.1 for more information.
- **Time Hack:** A time hack (based off of UTC as displayed in the SAF) was performed prior to starting encounters. The time hack allowed all participants to sync up their clocks prior to COMEX. Time hack was called by the TC, and although each card had a section for this, it was only performed once for each flight day.
- **Top View:** Geo-referenced top view of the encounter (based off of FalconView) showing what the ideal case would look like. CPA and IP are shown for the aircraft for that particular card.
- **Vertical Velocity**: Climb or descent rate of the aircraft in feet per minute.
- **VID Notice:** If an encounter was <500 ft in vertical separation, a notice was displayed on the top view to warn participants that a VID was required by 1 NM lateral separation or an abort would be called.

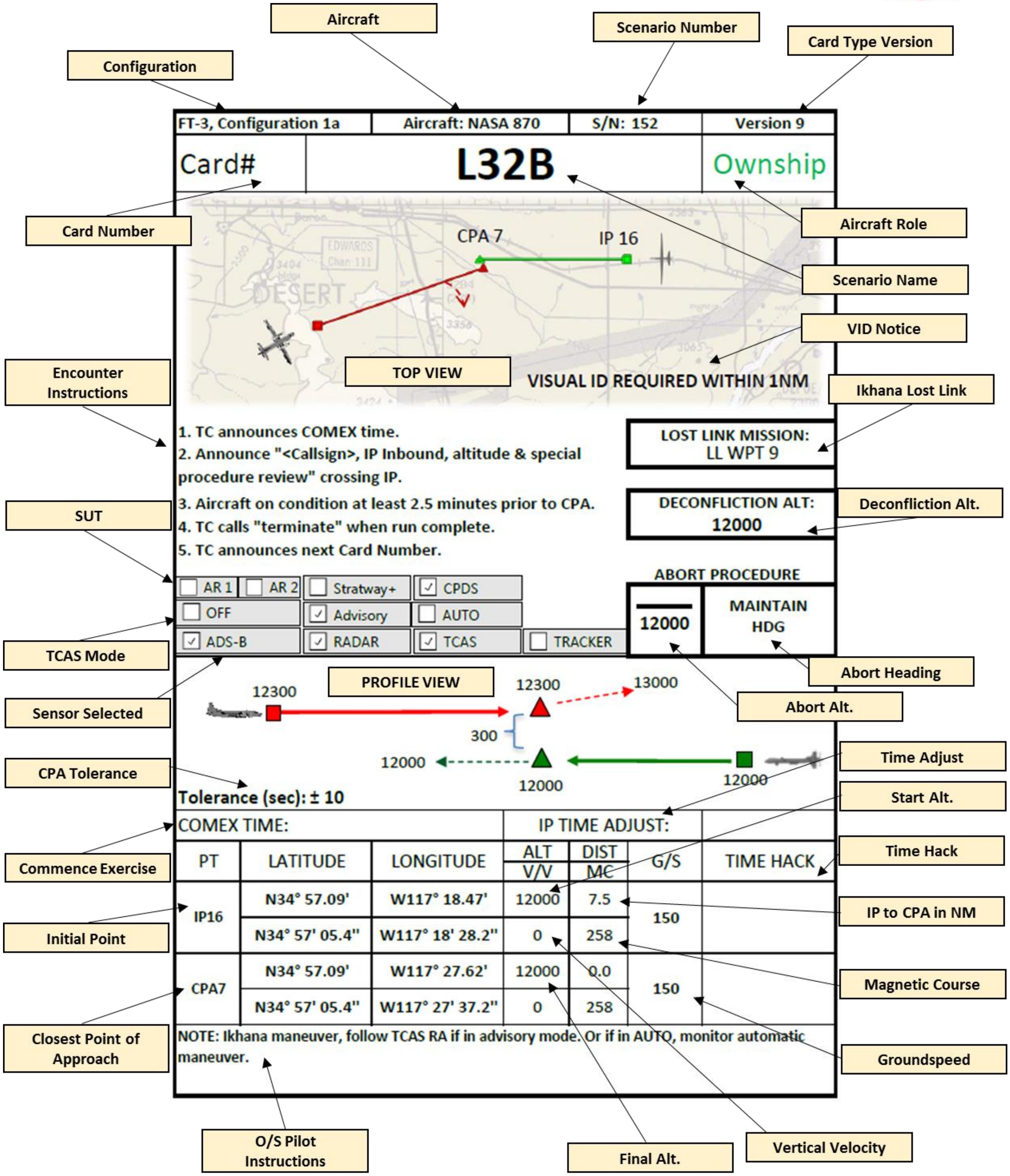
6.1.5.2.2 Intruder

Intruder cards showed the aircraft route of flight as either red (Intruder 1) or blue (Intruder 2). However, the cards were almost identical to the ownship cards:

- **No Sensor Select**: The intruder aircraft did not have the same sensor selection capabilities for inputting to the SUT; thus, this section was not required.
- **Intruder Pilot Instructions**: These instructions varied from the ownship and gave SA to the pilot and how the ownship would be performing.

Not depicted on example card:

- **Maneuver Point**: The MP was the point the intruder aircraft was expected to fly to and then perform a standard rate turn to another set of coordinates. The MP was denoted by a circle symbol.



FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 152	Version 9
Card#	L32B		Ownship

VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE
12000
MAINTAIN HDG

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER

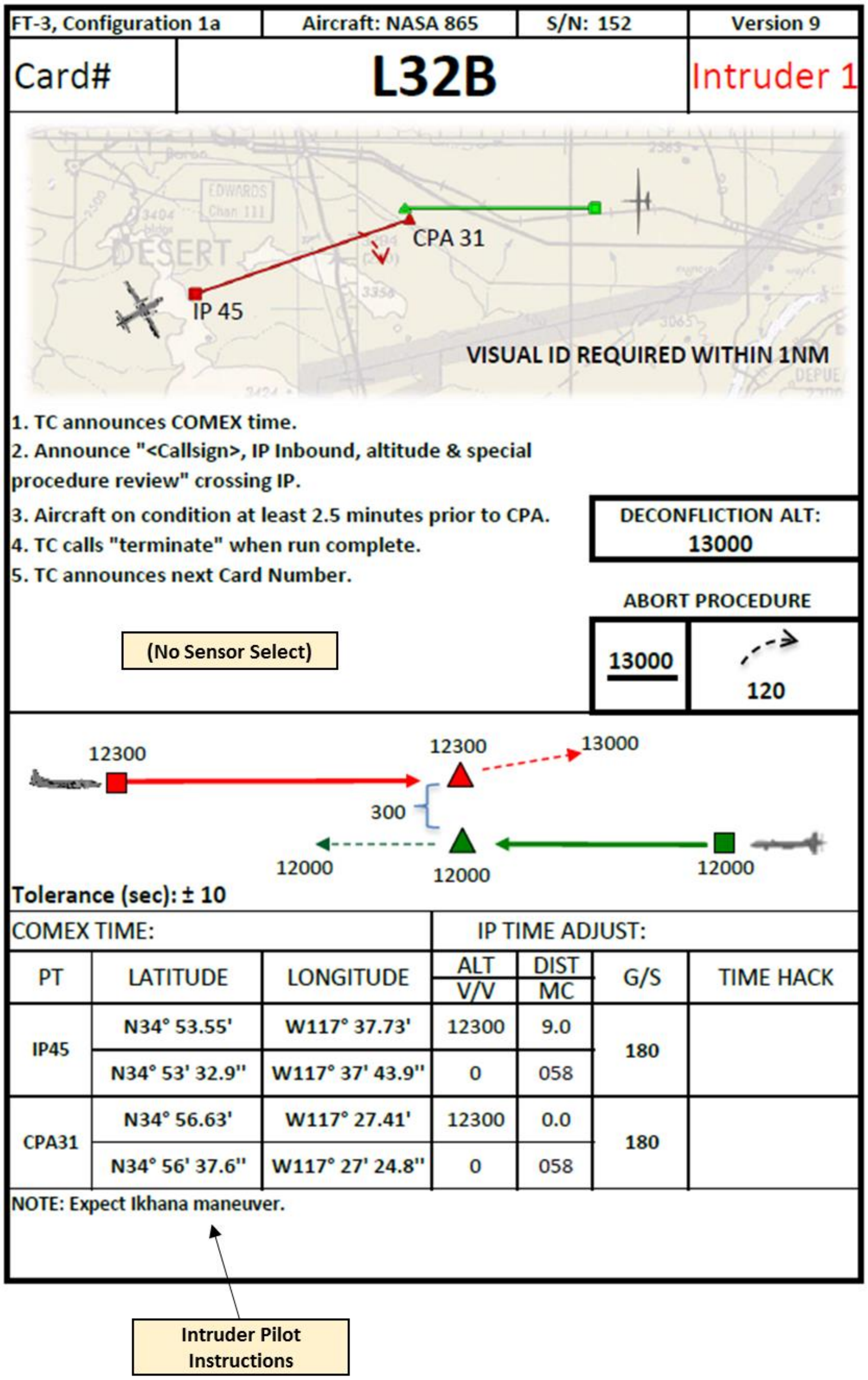
Tolerance (sec): ± 10

COMEX TIME: IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

Figure 34. Pairwise Encounters Ownship Example Test Card.



FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 152	Version 9
Card#	L32B		Intruder 1

VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000 | 120

(No Sensor Select)

Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP45	N34° 53.55'	W117° 37.73'	12300	9.0	180	
	N34° 53' 32.9"	W117° 37' 43.9"	0	058		
CPA31	N34° 56.63'	W117° 27.41'	12300	0.0	180	
	N34° 56' 37.6"	W117° 27' 24.8"	0	058		

NOTE: Expect Ikhana maneuver.

Intruder Pilot Instructions

Figure 35. Pairwise Encounters Intruder Example Test Card.

6.2 Configuration 2: Full Mission Encounters

Full Mission flight encounters, also identified as Configuration 2, followed a pre-planned flight plan that represents a fictitious Fireline route mission flown in Oakland Center Class E airspace (ZOA) that has been previously used for Integrated Human in the Loop (IHITL) and Full Mission simulation exercises. FT3 Full Mission would gather real flight data to improve simulation.

These missions involved a single ownship aircraft (UAS Surrogate T-34C) navigating a flight plan, two live intruder aircraft performing flight encounters that were generally scripted but had flexibility in execution to accommodate real-time changes during the test runs, and finally, multiple virtual intruders that were not displayed to the airborne aircrew but the ownship aircraft maneuvered to avoid based off inputs executed by the subject pilot located in the RGCS. Each live intruder encounter with UAS Surrogate ownship were 1v1 encounters. Figure 36 shows the ownship Fireline route and the expected paths and intercepts of the two live intruders (Intruder 1 – red, Intruder 2 – blue). Figure 37 shows the ownship, Intruder 1, and Intruder 2 routes overlaid, as well as expected live and virtual encounters.

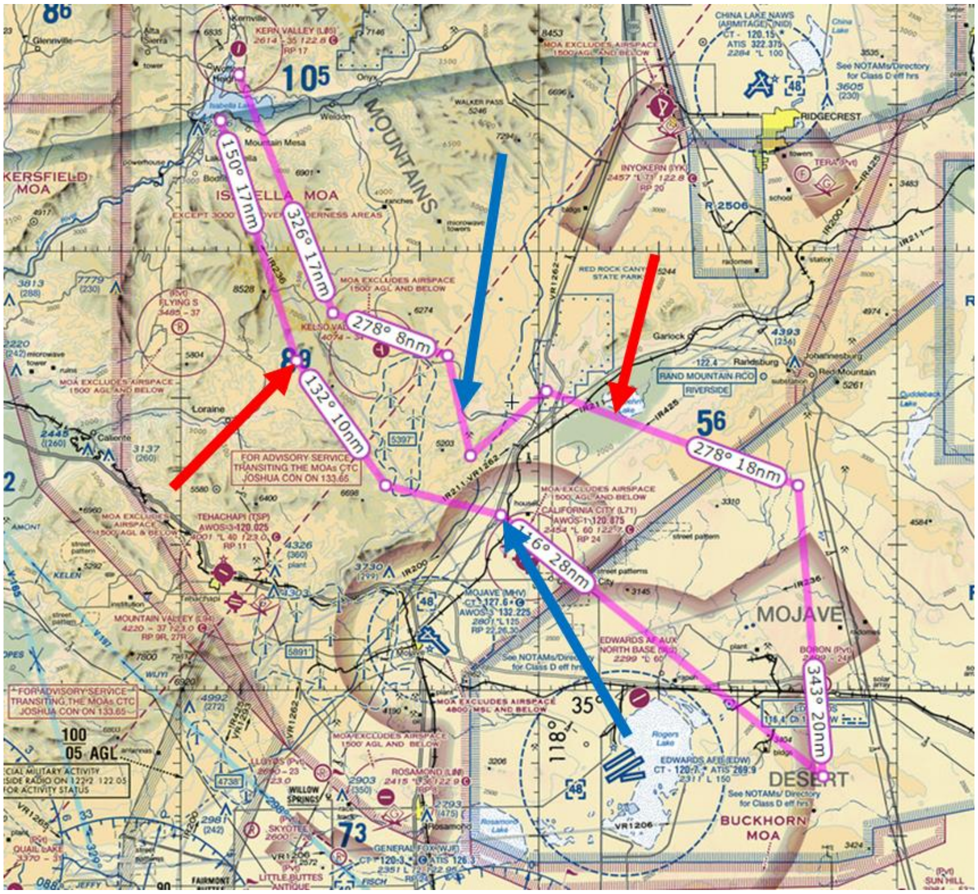


Figure 36. Fireline Ownship Route with Live Intruder Intercepts.

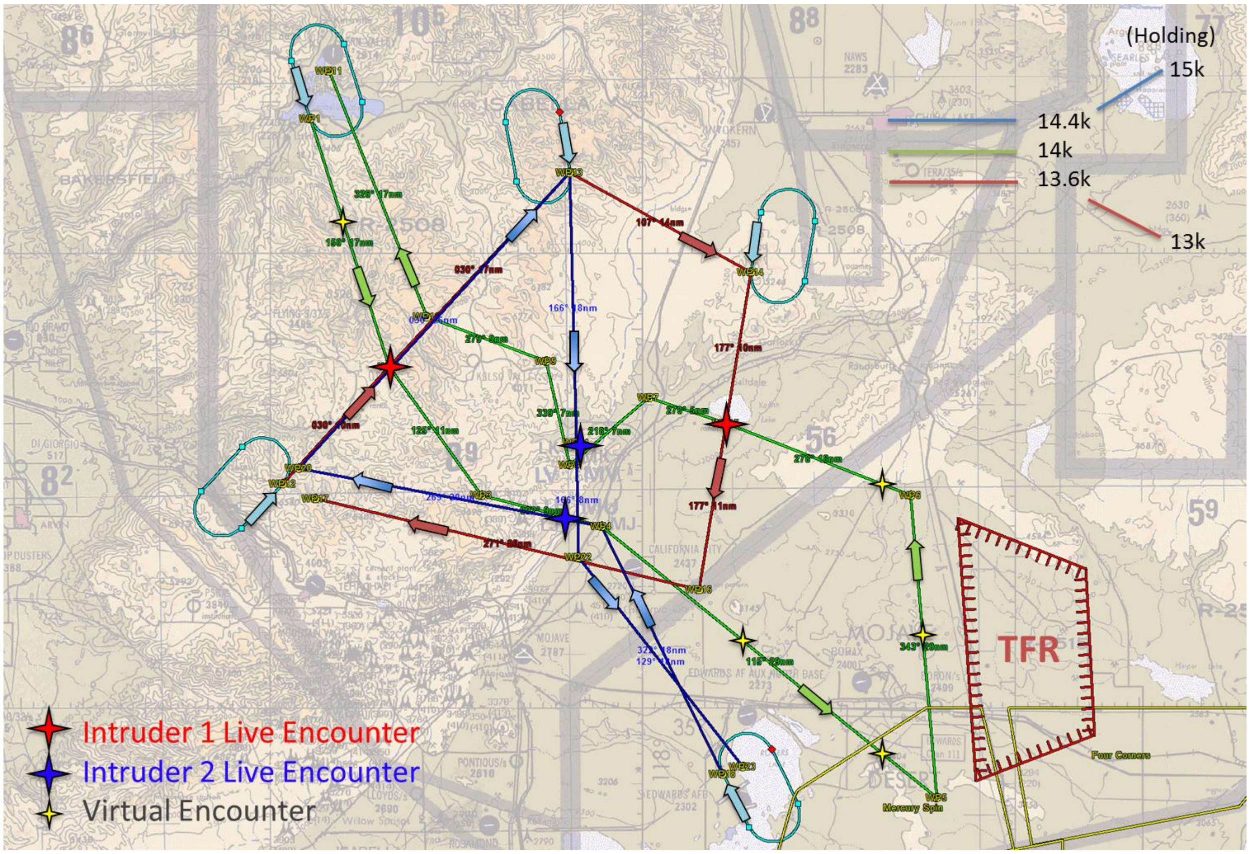


Figure 37. Fireline Routing, Ownship and Live/Virtual Intruders.

NASA 608 acted as a surrogate UAS for this configuration. The aircraft was directly controlled laterally by the RGCS pilot, and NASA 608's pilot would perform other maneuvers such as airspeed and altitude changes, received by the research computer from VSCS, and relayed to an on-board tablet. To the RGCS pilot, the route appeared to be in ZOA airspace on the VSCS display.

6.2.1 Fireline Route Development

The following stakeholders helped develop the Configuration 2 event:

- ARC – IT&E team members. These members represented the virtual ATC team and the ARC HSI interests. They were responsible for integrating the route depicted above into ZOA airspace (Figure 38), and with the restrictions required for flight in R-2508.
- ARC – HSI team members were the primary research team. The encounter intercepts they developed would put the test pilot under heavy working conditions in order to evaluate their display.
- AFRC – IT&E team members were responsible for local R-2508 and R-2515 coordination as well as overall flight execution. AFRC was responsible for relaying

the information to ARC HSI/IT&E to create a Temporary Flight Restriction (TFR) and slightly modify the Fireline route on waypoint 6.

- R-2508 CCB – The Complex Control Board (CCB) is the governing body for the R-2508 complex and as such represented High Desert TRACON as well as USAF R-2515 interests.
- GRC – Communication – The Glenn team was responsible for the T-34 NASA 608 during Configuration 2.

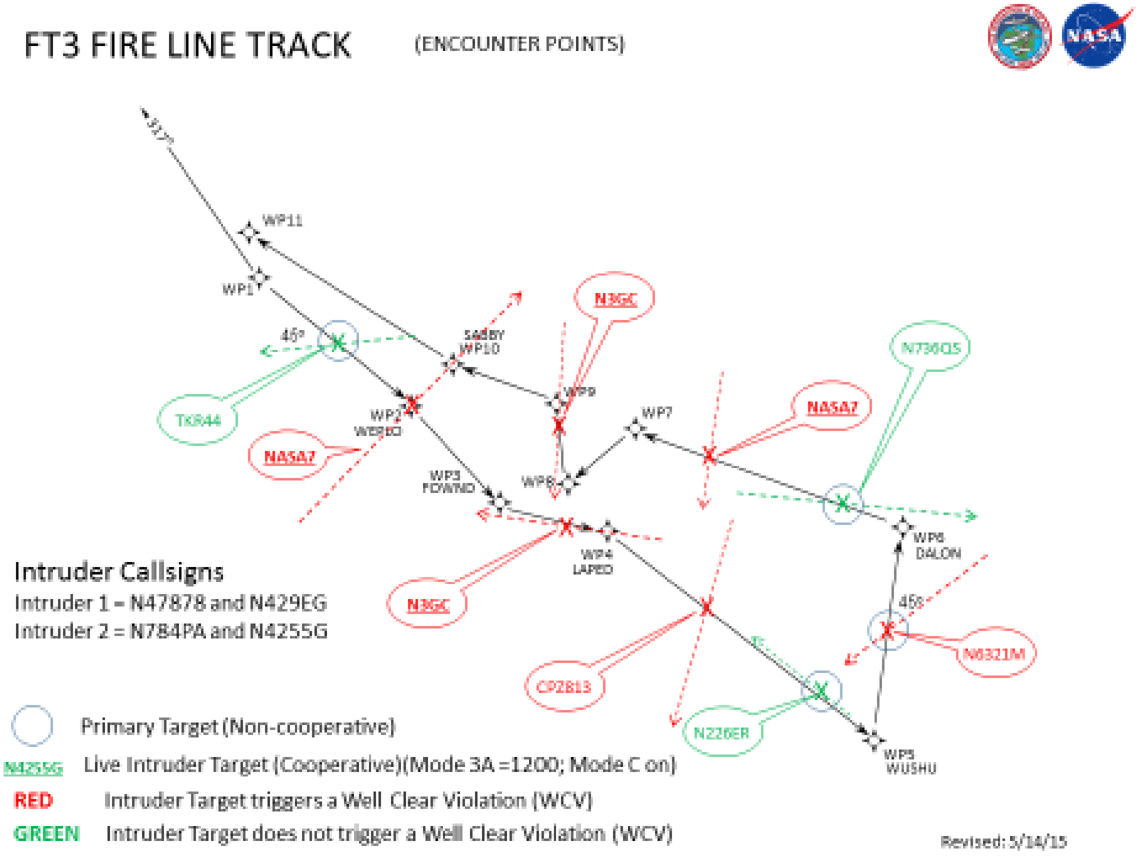


Figure 38. Full Mission Fireline Route and Encounters.

6.2.2 Constraints and Limitations

The Configuration 2 ownship was controlled by the RGCS, whose subject pilot under test was immersed in a virtual ATC, ZOA, and environment. Where aircrew in Configuration 1 flights maneuvered according to the display, aircrew in Configuration 2 coordinated with ATC as if they were actually operating an aircraft in Oakland Center's airspace. Furthermore, ownship maneuvers were less predictable in Configuration 2 and resulted in missed encounters as discussed in Section 8 of this report.

Transiting from High Desert TRACON (Joshua) control to SPORT control needed prior coordination and in some cases imposed minor delays, on the order of minutes, while the controllers conducted hand overs. Although entry and use of the Isabella MOA was

essentially guaranteed for participating aircraft with a Sage or Pancho clearance, entry into R-2515 was not guaranteed as NASA aircraft are assigned a lower priority than many USAF programs.

6.2.3 Flight Card Description

Due to its unique nature, Full Mission flight cards were completely developed by Armstrong IT&E Operations for Flight Test Series 3. Because of the distinctive and repeating route for each flight day, one set of cards was created that was used every day: Ownship, Intruder 1, and Intruder 2.

These cards were produced to be easy to use by the airborne users and other ground participants, not designed for the pilot using the SUT (RGCS). The cards were made to clearly show where live encounters were to occur, from what waypoints and holding patterns the intruder pilots should maneuver, and from where the ownship should expect fused reality virtual encounters.

Using the same color scheme but reversed altitudes from Configuration 1:

- Ownship and middle altitude aircraft was **green**
- Intruder 1 and **lower** altitude aircraft was **red**
- Intruder 2 and **higher** altitude aircraft was **blue**

6.2.3.1 Production

As in Configuration 1, Configuration 2 cards were built in Microsoft Excel®. However, since all coordinates and geometries were provided by Ames IT&E Operations (and there was only one Fireline route), the cards were created manually. The geo-referenced top view images were again created in FalconView, but manually.

6.2.3.2 Breakdown

The following is a breakdown and description of unique elements on each of the Configuration 2 flight cards. Figure 39, Figure 40, and Figure 41 depict the flight cards used for Configuration 2.

6.2.3.2.1 Ownship

Ownship card depicted the aircraft route of flight as green. Here are the main cards sections, listed alphabetically, and a brief explanation for each:

- **Abort Procedure:** For Configuration 2, the word “abort” did not have the same meaning as in Configuration 1. Since the tracks for Configuration 2 were much longer (~40min), an abort simply meant that the intruder aircraft would “increase vertical separation” (to obtain a separation of at least 500 ft between aircraft) and continue the encounter. If visual was not acquired within the 1 NM range, the pilots would call “blind” and the TC would instruct them to hold level, climb, or descend, as required.

- **Aircraft Role:** This section specified whether the aircraft was Ownship, Intruder 1, or Intruder 2.
- **Aircraft:** Callsign of the aircraft for that test card.
- **COMEX:** Although there are several sections to input COMEX, the Fireline route only had one COMEX at the beginning of the mission. This section was therefore used to show at what time an intruder would push to CPA instead.
- **Configuration:** Flight Test Series Configuration. Configuration 2 had one Full Mission.
- **Deconfliction Alt:** Altitude aircraft would fly in between test points. A carry-over from Configuration 1, ultimately participants stayed at their encounter altitude in between runs for efficiency.
- **Distance:** The distance between IP WP and encounter WP in nautical miles, for reference.
- **Fly-to WP:** The Fly-to WP is the point the aircraft is expected to fly-to if there is no encounter. For a couple of encounters (3, 4) this is the case since the Live Encounter WP is not on the flight plan for ownship.
- **Holding Pattern:** The ownship's holding pattern before COMEX and the start of the Fireline route.
- **Live Encounter #:** Denotes which Live Encounter on the Fireline is being shown. The route had 4 live encounters (1, 3 – intruder 1 and 2, 4 – intruder 2).
- **Live Encounter WP:** The WP at which the intruder is heading to, and the live encounter, will occur.
- **Live Encounter:** Live encounters occur with one ownship and one intruder (no multi-ship for Configuration 2).
- **Magnetic Course:** Expected MC at waypoint.
- **O/S Enc. Alt:** Expected altitude of the ownship at the live encounter.
- **O/S Enc. Mag. Course:** Expected magnetic course of the ownship at the live encounter.
- **Ownship Airspeed:** Expected airspeed of the ownship at the live encounter.
- **Profile View:** Side view of the encounter showing expected altitudes and vertical separation for ownship and intruder.
- **TFR:** A virtual TFR was added to the Fireline route to keep all aircraft west of specific test areas (per a request from airspace coordination).
- **Top View:** Geo-referenced top view of the Fireline route showing what the ideal case would look like. The top view shows both the Live and Virtual Encounters, as well as the TFR and holding patterns.
- **VID Notice:** Since all live encounters were <500 ft for Configuration 2, a notice was displayed on the top view to warn participants that a VID was required by 1 NM lateral separation or an abort would be called.

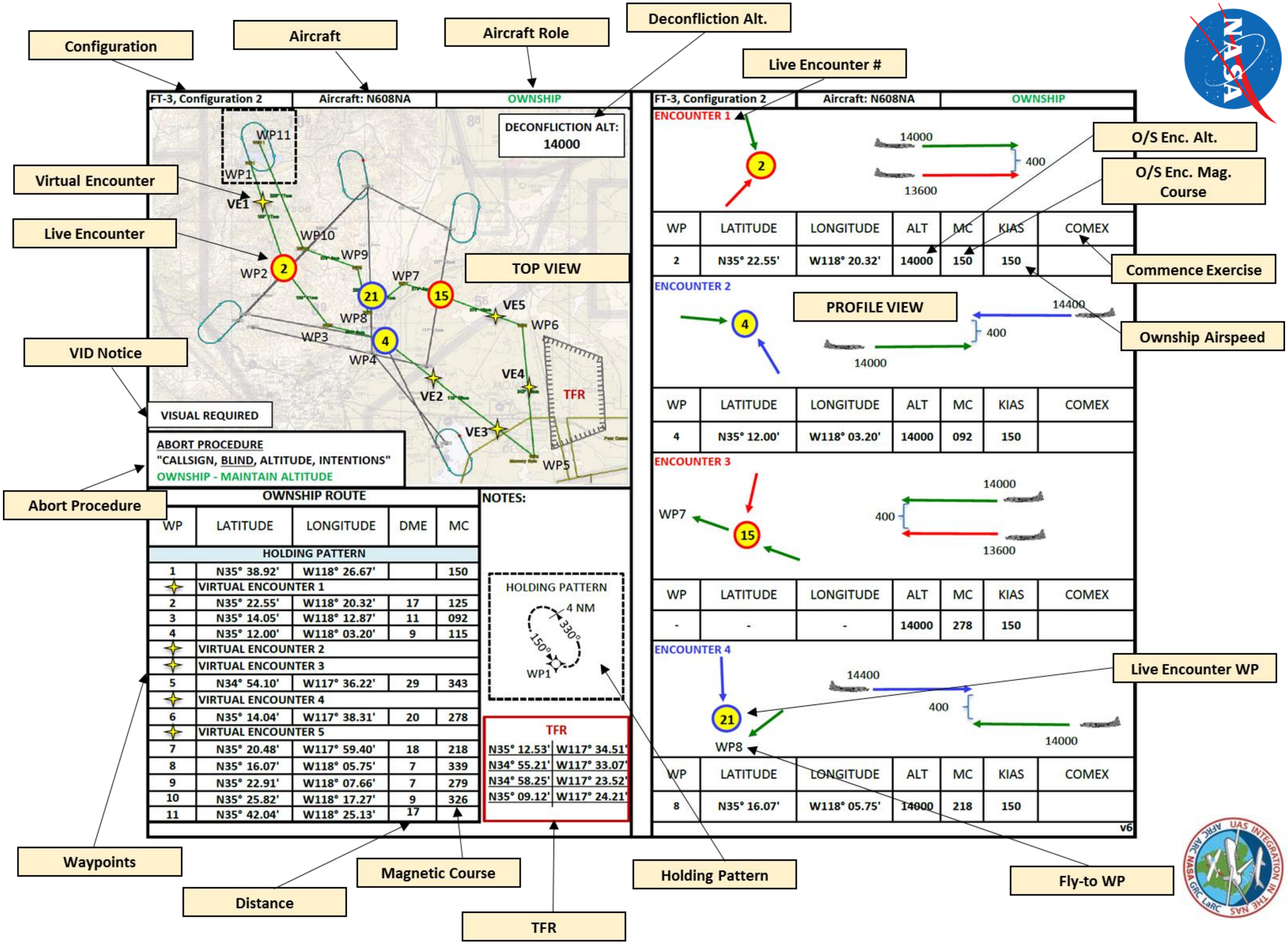
- **Virtual Encounter:** These encounters were only visible to the RGCS pilot. They were displayed to the aircraft pilots to show where a maneuver would be expected by ownship from RGCS.
- **Waypoints:** List of waypoints for the aircraft to follow for the Fireline.

6.2.3.2.2 Intruder 1

- **Waypoint IP:** The waypoint the intruder aircraft was expected to push out from. This was denoted as a square symbol and labeled so that the intruder could have quick SA on where to push from.
- **Holding Pattern 1:** Intruder 1 had two separate holding patterns. This one is before encounter 1 and is located in the southwest.
- **Holding Pattern 2:** Holding pattern before encounter 3 on the Fireline (intruder 1’s second encounter) located in the northeast.

6.2.3.2.3 Intruder 2

- **Holding Pattern 1:** Holding pattern before encounter 2 on the Fireline (intruder 2’s first encounter) located in the southeast.
- **Holding Pattern 2:** Holding pattern before encounter 4 on the Fireline (intruder 2’s second encounter) located in the north.



FT-3, Configuration 2	Aircraft: N608NA	OWNSHIP

DECONFLICTION ALT:
14000

VISUAL REQUIRED

ABORT PROCEDURE
"CALLSIGN, BLIND, ALTITUDE, INTENTIONS"
OWNSHIP - MAINTAIN ALTITUDE

OWNSHIP ROUTE

WP	LATITUDE	LONGITUDE	DME	MC
HOLDING PATTERN				
1	N35° 38.92'	W118° 26.67'		150
✦	VIRTUAL ENCOUNTER 1			
2	N35° 22.55'	W118° 20.32'	17	125
3	N35° 14.05'	W118° 12.87'	11	092
4	N35° 12.00'	W118° 03.20'	9	115
✦	VIRTUAL ENCOUNTER 2			
✦	VIRTUAL ENCOUNTER 3			
5	N34° 54.10'	W117° 36.22'	29	343
✦	VIRTUAL ENCOUNTER 4			
6	N35° 14.04'	W117° 38.31'	20	278
✦	VIRTUAL ENCOUNTER 5			
7	N35° 20.48'	W117° 59.40'	18	218
8	N35° 16.07'	W118° 05.75'	7	339
9	N35° 22.91'	W118° 07.66'	7	279
10	N35° 25.82'	W118° 17.27'	9	326
11	N35° 42.04'	W118° 25.13'	17	

NOTES:

HOLDING PATTERN

TFR

N35° 12.53'	W117° 34.51'
N34° 55.21'	W117° 33.07'
N34° 58.25'	W117° 23.52'
N35° 09.12'	W117° 24.21'

FT-3, Configuration 2	Aircraft: N608NA	OWNSHIP

ENCOUNTER 1

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
2	N35° 22.55'	W118° 20.32'	14000	150	150	

ENCOUNTER 2

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
4	N35° 12.00'	W118° 03.20'	14000	092	150	

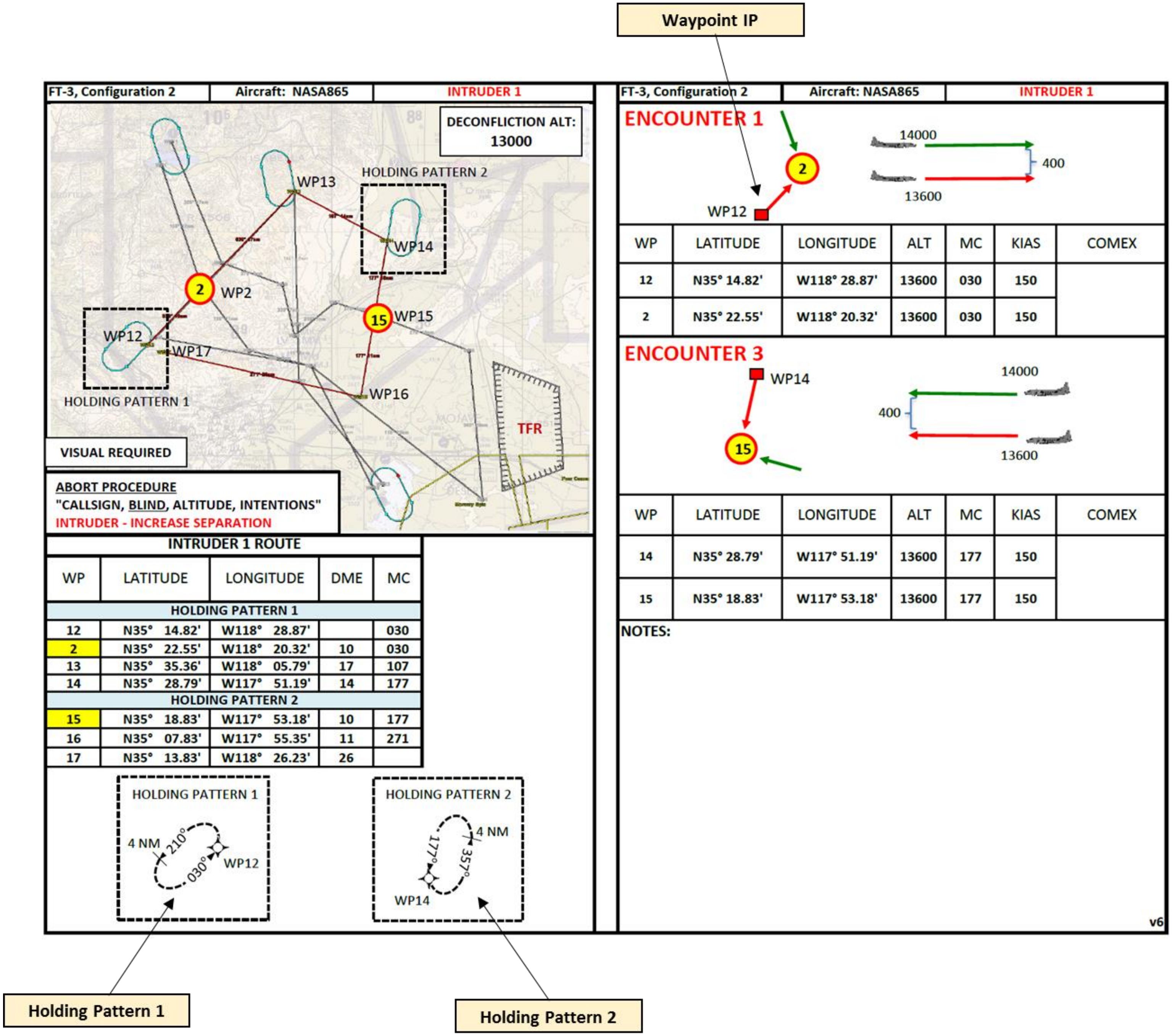
ENCOUNTER 3

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
-	-	-	14000	278	150	

ENCOUNTER 4

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
8	N35° 16.07'	W118° 05.75'	14000	218	150	

Figure 39. Full Mission Ownship Test Card.



FT-3, Configuration 2 | Aircraft: NASA865 | INTRUDER 1

DECONFLICTION ALT: 13000

VISUAL REQUIRED

ABORT PROCEDURE
"CALLSIGN, BLIND, ALTITUDE, INTENTIONS"
INTRUDER - INCREASE SEPARATION

INTRUDER 1 ROUTE

WP	LATITUDE	LONGITUDE	DME	MC
HOLDING PATTERN 1				
12	N35° 14.82'	W118° 28.87'		030
2	N35° 22.55'	W118° 20.32'	10	030
13	N35° 35.36'	W118° 05.79'	17	107
14	N35° 28.79'	W117° 51.19'	14	177
HOLDING PATTERN 2				
15	N35° 18.83'	W117° 53.18'	10	177
16	N35° 07.83'	W117° 55.35'	11	271
17	N35° 13.83'	W118° 26.23'	26	

FT-3, Configuration 2 | Aircraft: NASA865 | INTRUDER 1

ENCOUNTER 1

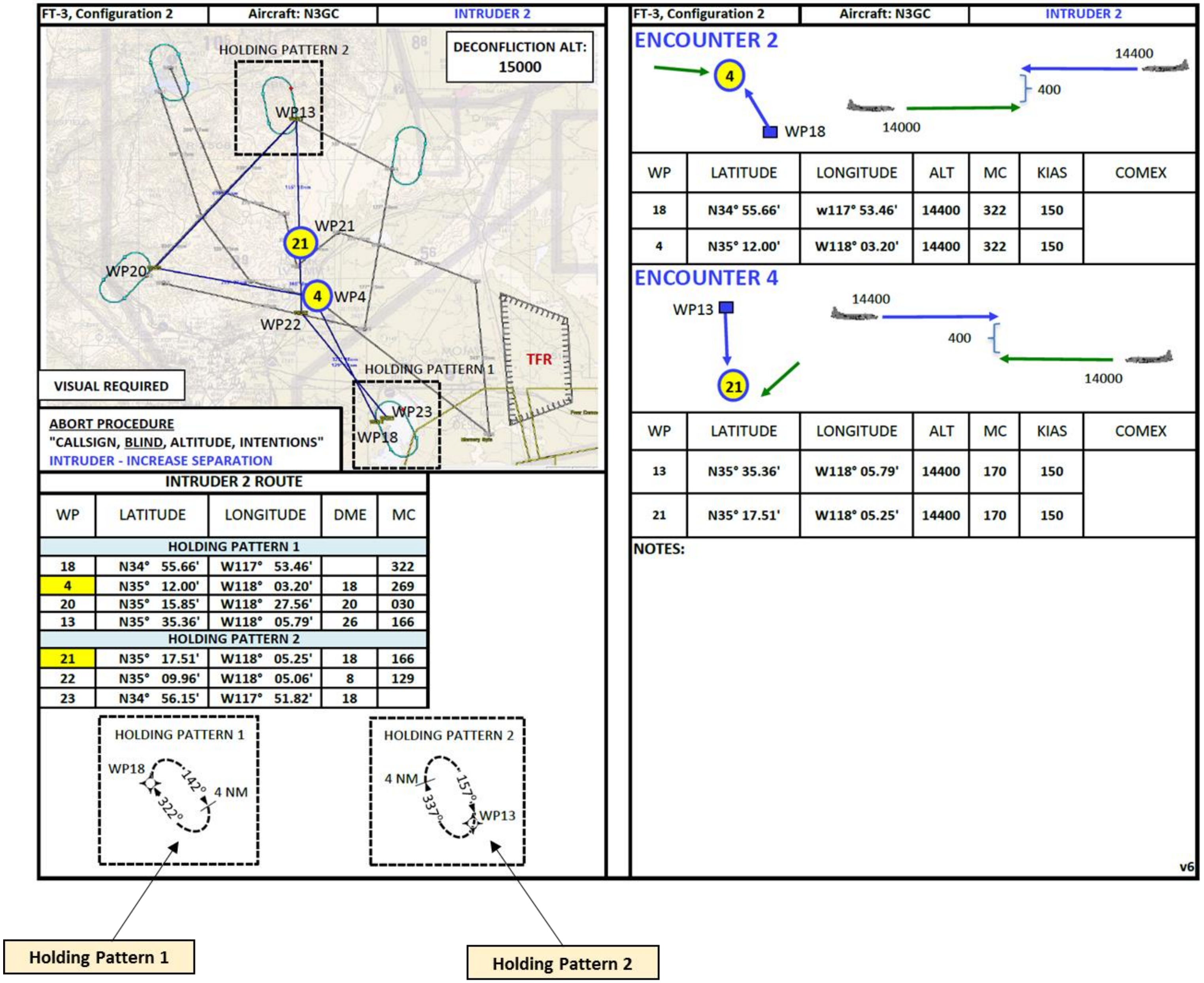
WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
12	N35° 14.82'	W118° 28.87'	13600	030	150	
2	N35° 22.55'	W118° 20.32'	13600	030	150	

ENCOUNTER 3

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
14	N35° 28.79'	W117° 51.19'	13600	177	150	
15	N35° 18.83'	W117° 53.18'	13600	177	150	

NOTES:

Figure 40. Full Mission Intruder 1 Test Card.



FT-3, Configuration 2 | Aircraft: N3GC | INTRUDER 2

DECONFLICTION ALT: 15000

VISUAL REQUIRED

ABORT PROCEDURE
"CALLSIGN, BLIND, ALTITUDE, INTENTIONS"
INTRUDER - INCREASE SEPARATION

INTRUDER 2 ROUTE

WP	LATITUDE	LONGITUDE	DME	MC
HOLDING PATTERN 1				
18	N34° 55.66'	W117° 53.46'		322
4	N35° 12.00'	W118° 03.20'	18	269
20	N35° 15.85'	W118° 27.56'	20	030
13	N35° 35.36'	W118° 05.79'	26	166
HOLDING PATTERN 2				
21	N35° 17.51'	W118° 05.25'	18	166
22	N35° 09.96'	W118° 05.06'	8	129
23	N34° 56.15'	W117° 51.82'	18	

FT-3, Configuration 2 | Aircraft: N3GC | INTRUDER 2

ENCOUNTER 2

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
18	N34° 55.66'	w117° 53.46'	14400	322	150	
4	N35° 12.00'	W118° 03.20'	14400	322	150	

ENCOUNTER 4

WP	LATITUDE	LONGITUDE	ALT	MC	KIAS	COMEX
13	N35° 35.36'	W118° 05.79'	14400	170	150	
21	N35° 17.51'	W118° 05.25'	14400	170	150	

NOTES:

v6

Figure 41. Full Mission Intruder 2 Test Card.

7 Flight Summary

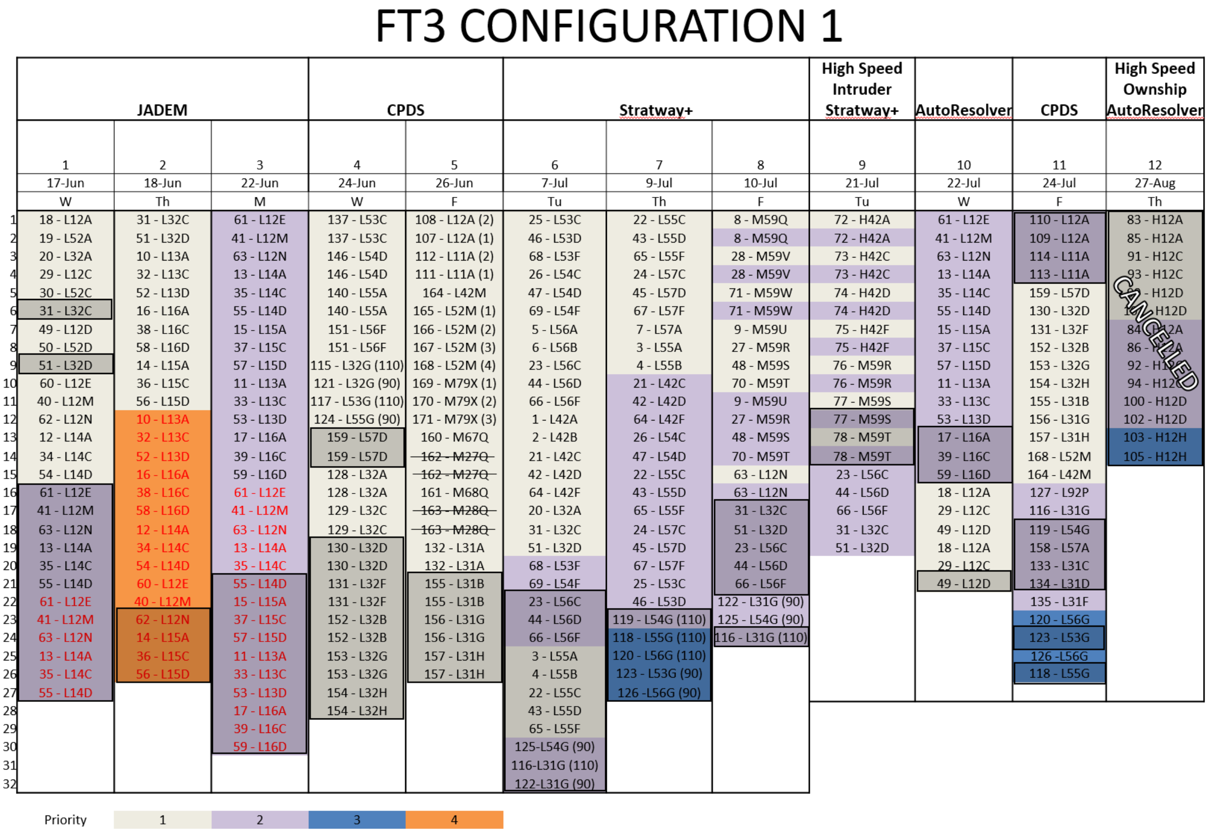
The following is a summary of each flight day for Flight Test Series 3.

7.1 Configuration 1

Configuration 1 flight points were conducted from June 17, 2015, to July 24, 2015. Figure 42 shows the prioritization of flights and test points. Scenarios were prioritized in the following ways:

- Numbering scheme based on researcher input (Priority 1, 2, 3, 4).
- Build-up approach (higher to lower vertical separation, advisory to AUTO, etc.).
- Ease of flight (airspace transition from one encounter to next).
- Repeating encounters grouped.
- Sun angle consideration.

Test points not completed are grayed out. Test points that are crossed out were removed from the flight schedule by the researcher (deemed unnecessary for mission success).



FT3 CONFIGURATION 1

	JADEM			CPDS		Stratway+			High Speed Intruder Stratway+	AutoResolver	CPDS	High Speed Ownship AutoResolver
	1	2	3	4	5	6	7	8	9	10	11	12
	17-Jun	18-Jun	22-Jun	24-Jun	26-Jun	7-Jul	9-Jul	10-Jul	21-Jul	22-Jul	24-Jul	27-Aug
	W	Th	M	W	F	Tu	Th	F	Tu	W	F	Th
1	18 - L12A	31 - L32C	61 - L12E	137 - L53C	108 - L12A (2)	25 - L53C	22 - L55C	8 - M59Q	72 - H42A	61 - L12E	110 - L12A	83 - H12A
2	19 - L52A	51 - L32D	41 - L12M	137 - L53C	107 - L12A (1)	46 - L53D	43 - L55D	8 - M59Q	72 - H42A	41 - L12M	109 - L12A	85 - H12A
3	20 - L32A	10 - L13A	63 - L12N	146 - L54D	112 - L11A (2)	68 - L53F	65 - L55F	28 - M59V	73 - H42C	63 - L12N	114 - L11A	91 - H12C
4	29 - L12C	32 - L13C	13 - L14A	146 - L54D	111 - L11A (1)	26 - L54C	24 - L57C	28 - M59V	73 - H42C	13 - L14A	113 - L11A	93 - H12C
5	30 - L52C	52 - L13D	35 - L14C	140 - L55A	164 - L42M	47 - L54D	45 - L57D	71 - M59W	74 - H42D	35 - L14C	159 - L57D	[illegible] - H12D
6	31 - L32C	16 - L16A	55 - L14D	140 - L55A	165 - L52M (1)	69 - L54F	67 - L57F	71 - M59W	74 - H42D	55 - L14D	130 - L32D	[illegible] - H12D
7	49 - L12D	38 - L16C	15 - L15A	151 - L56F	166 - L52M (2)	5 - L56A	7 - L57A	9 - M59U	75 - H42F	15 - L15A	131 - L32F	84 - H12A
8	50 - L52D	58 - L16D	37 - L15C	151 - L56F	167 - L52M (3)	6 - L56B	3 - L55A	27 - M59R	75 - H42F	37 - L15C	152 - L32B	86 - H12A
9	51 - L32D	14 - L15A	57 - L15D	115 - L32G (110)	168 - L52M (4)	23 - L56C	4 - L55B	48 - M59S	76 - M59R	57 - L15D	153 - L32G	92 - H12C
10	60 - L12E	36 - L15C	11 - L13A	121 - L32G (90)	169 - M79X (1)	44 - L56D	21 - L42C	70 - M59T	76 - M59R	11 - L13A	154 - L32H	94 - H12C
11	40 - L12M	56 - L15D	33 - L13C	117 - L53G (110)	170 - M79X (2)	66 - L56F	42 - L42D	9 - M59U	77 - M59S	33 - L13C	155 - L31B	100 - H12D
12	62 - L12N	10 - L13A	53 - L13D	124 - L55G (90)	171 - M79X (3)	1 - L42A	64 - L42F	27 - M59R	77 - M59S	53 - L13D	156 - L31G	102 - H12D
13	12 - L14A	32 - L13C	17 - L16A	159 - L57D	160 - M67Q	2 - L42B	26 - L54C	48 - M59S	78 - M59T	17 - L16A	157 - L31H	103 - H12H
14	34 - L14C	52 - L13D	39 - L16C	159 - L57D	~~162 - M27Q~~	21 - L42C	47 - L54D	70 - M59T	78 - M59T	39 - L16C	168 - L52M	105 - H12H
15	54 - L14D	16 - L16A	59 - L16D	128 - L32A	~~162 - M27Q~~	42 - L42D	22 - L55C	63 - L12N	23 - L56C	59 - L16D	164 - L42M	
16	61 - L12E	38 - L16C	61 - L12E	128 - L32A	161 - M68Q	64 - L42F	43 - L55D	63 - L12N	44 - L56D	18 - L12A	127 - L92P	
17	41 - L12M	58 - L16D	41 - L12M	129 - L32C	~~163 - M28Q~~	20 - L32A	65 - L55F	31 - L32C	66 - L56F	29 - L12C	116 - L31G	
18	63 - L12N	12 - L14A	63 - L12N	129 - L32C	~~163 - M28Q~~	31 - L32C	24 - L57C	51 - L32D	31 - L32C	49 - L12D	119 - L54G	
19	13 - L14A	34 - L14C	13 - L14A	130 - L32D	132 - L31A	51 - L32D	45 - L57D	23 - L56C	51 - L32D	18 - L12A	158 - L57A	
20	35 - L14C	54 - L14D	35 - L14C	130 - L32D	132 - L31A	68 - L53F	67 - L57F	44 - L56D		29 - L12C	133 - L31C	
21	55 - L14D	60 - L12E	55 - L14D	131 - L32F	155 - L31B	69 - L54F	25 - L53C	66 - L56F		49 - L12D	134 - L31D	
22	61 - L12E	40 - L12M	15 - L15A	131 - L32F	155 - L31B	23 - L56C	46 - L53D	122 - L31G (90)			135 - L31F	
23	41 - L12M	62 - L12N	37 - L15C	152 - L32B	156 - L31G	44 - L56D	119 - L54G (110)	125 - L54G (90)			120 - L56G	
24	63 - L12N	14 - L15A	57 - L15D	152 - L32B	156 - L31G	66 - L56F	118 - L55G (110)	116 - L31G (110)			123 - L53G	
25	13 - L14A	36 - L15C	11 - L13A	153 - L32G	157 - L31H	3 - L55A	120 - L56G (110)				126 -L56G	
26	35 - L14C	56 - L15D	33 - L13C	153 - L32G	157 - L31H	4 - L55B	123 - L53G (90)				118 - L55G	
27	55 - L14D		53 - L13D	154 - L32H		22 - L55C	126 -L56G (90)					
28			17 - L16A	154 - L32H		43 - L55D						
29			39 - L16C			65 - L55F						
30			59 - L16D			125-L54G (90)						
31						116-L31G (110)						
32						122-L31G (90)						

CANCELLED

Priority	1	2	3	4

Figure 42. Prioritization of and Flown Encounters.

The subjective analysis is according to Armstrong Ops and may differ from researchers' opinions. Test points are shown in order flown. Flight duration is based on the ownship's time in the air. COMEX is written in local time. Traffic Advisories (TAs) and RAs are noted. Altitudes are flight level MSL and at CPA or maneuver start. Sensors selected for that

encounter are shown (ADS-B, Radar, TCAS, Tracker). The last three columns are timing from CPA (+ is to arrive after, - is to arrive before) or maneuver suggested by display (if type is “Follow”). Boxes with a “-” denote missing data. [R] is repeat.

7.1.1 Flight 1: June 17, 2015

Table 12. Config 1 Flight 1 Data.

Flight	**1**																
SUT	**AutoResolver**																
Duration	**5 hours**																
Intruder(s)	**N3GC**																
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	18-L12A	Fly-through, AR1	0758	120		130	TA	N/A	N/A	X	X	X	X	-10	-10	N/A
	2	19-L52A	Fly-through, AR1	0810	120		125		N/A	N/A	X	X	X		0	-2	N/A
	3	20-L32A	Fly-through, AR1	0820	120	RA	123		N/A	N/A	X	X	X	X	+10	+8	N/A
	4	29-L12C	Fly-through, AR1	0834	120		130		N/A	N/A	X	X	X	X	+2	+10	N/A
	5	49-L12D	Fly-through, AR1	0843	120		130		N/A	N/A	X	X	X	X	0	+6	N/A
	6	60-L12E	Fly-through, AR1	0855	120		130		N/A	N/A	X	X	X	X	+10	+10	N/A
	7	40-L12M	Fly-through, AR1	0910	140		150		N/A	N/A	X	X	X	X	+15	+23	N/A
	8	62-L12N	Fly-through, AR1	0923	140		150		N/A	N/A	X	X	X	X	+0	+1	N/A
	9	12-L14A	Fly-through, AR1	0938	120	TA	130		N/A	N/A	X	X	X	X	+8	-7	N/A
	10	34-L14C	Fly-through, AR1	0950	120		130		N/A	N/A	X	X	X	X	+6	-20	N/A
	11	54-L14D	Fly-through, AR1	1000	120		130		N/A	N/A	X	X	X	X	-1	+5	N/A
	12	30-L52C	Fly-through, AR1	1013	120		125		N/A	N/A	X	X	X	X	-	-	N/A
	13	30-L52C [R]	Fly-through, AR1	1023	120		125		N/A	N/A	X	X	X	X	-2	-5	N/A
	14	50-L52D	Fly-through, AR1	1033	120		125		N/A	N/A	X	X	X	X	-20	+9	N/A
	15	50-L52D [R]	Fly-through, AR1	1043	120		125		N/A	N/A	X			X	-10	+6	N/A

Notes: Altimeter calibration performed (N3GC +50 ft). Level acceleration performed. Artificial offset was applied for 1,000 ft runs. No 300 ft non-head-on encounters allowed due to no ADS-B in SAF. Used wind matrix for climb/descent encounters.
Encounters: 1 – good, 2 – good, 3 – O/S RA, good, 4 – int1 start off angle ~30deg MC, good, 5 – good, 6 – good, 7 – run 3 min instead of 3.25, int1 turn late, bad, 8 – good, 9 – wind adjust -10s, TA to climb rather than descend (O/S), good, 10 – wind adjust +7s, int1 late, bad, 11 – wind adjust -12s, good, 12 – ABORT lost VID, 13 – good, 14 – O/S late, bad, 15 - good
Airspace: Requested Buckhorn, SPORT raised flight test to FL140 then FL150 (temporary) due to MQ-9 lasing in West Range. Affected runs 7, 8.
Baro/Vis: 29.92, clear
Wind: 1 – O/S 251/20, int1 220/10, 8 – O/S 205/18, int1 195/20, 10 – int1 256/10, 11 – int1 210/17
Bottom Line: Overall, test points were conducted well. The wind matrix had some errors and went through its first iteration. Although ADS-B was not functional in the SAF, the test was still able to continue for 300 ft “head-on” (0 degree angle into) encounters. Additionally, Fusion (Tracker) was seeing problems with tracks. Nonetheless the researcher was pleased with data since there was no “real world” data previous to this. A decision was made to audibly announce TA/RA alerts for proceeding flights (all platforms).

7.1.2 Flight 2: June 18, 2015

Table 13. Config. 1 Flight 2 Data.

Flight	**2**																
SUT	**AutoResolver**																
Duration	**4.9 hours**																
Intruder(s)	**N3GC**																
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	31-L32C	Fly-through, AR1	0643	120	TA/RA	123	TA	N/A	N/A	X				-2	-2	N/A
	2	51-L32D	Fly-through, AR1	0653	120	TA/RA	123	TA/RA	N/A	N/A	X				+8	+6	N/A
	3	10-L13A	Fly-through, AR1	0704	165		155		N/A	N/A		X		X	0	-10	N/A
	4	32-L13C	Fly-through, AR1	0715	165		155		N/A	N/A	X				+8	-30	N/A
	5	52-L13D	Fly-through, AR1	0725	165		155		N/A	N/A			X	X	+4	+10	N/A
	6	16-L16A	Fly-through, AR1	0735	136		120		N/A	N/A	X				0	+10	N/A
	7	38-L16C	Fly-through, AR1	0745	130		120		N/A	N/A	X	X	X	X	-2	+1	N/A
	8	58-L16D	Fly-through, AR1	0755	130		120		N/A	N/A	X	X	X	X	+7	+2	N/A
	9	14-L15A	Fly-through, AR1	0805	150		160		N/A	N/A	X	X	X	X	+18	-2	N/A
	10	36-L15C	Fly-through, AR1	0817	150		160		N/A	N/A	X	X	X	X	+5	+4	N/A
	11	56-L15D	Fly-through, AR1	0826	150		160		N/A	N/A	X	X	X	X	+5	+7	N/A
	12	10-L13A	Fly-through, AR2	0835	165		155		N/A	N/A	X	X	X	X	+9	-7	N/A
	13	32-L13C	Fly-through, AR2	0845	165		155		N/A	N/A	X	X	X	X	+5	-15	N/A
	14	52-L13D	Fly-through, AR2	0855	165		155		N/A	N/A	X	X	X	X	0	+28	N/A
	15	16-L16A	Fly-through, AR2	0905	130		120		N/A	N/A	X	X	X	X	+6	-1	N/A
	16	38-L16C	Fly-through, AR2	0916	130		120		N/A	N/A	X	X	X	X	+3	+3	N/A
	17	58-L16D	Fly-through, AR2	0925	130		120		N/A	N/A	X	X	X	X	-15	+8	N/A
	18	12-L14A	Fly-through, AR2	0935	120		135		N/A	N/A	X	X	X	X	+1	-20	N/A
	19	34-L14C	Fly-through, AR2	0945	120	TA	130	TA	N/A	N/A	X	X	X	X	+4	-10	N/A
	20	54-L14D	Fly-through, AR2	0955	120	TA	130		N/A	N/A	X	X	X	X	+5	+17	N/A
	21	60-L12E	Fly-through, AR2	1005	120		130		N/A	N/A	X	X	X	X	-	-	N/A
	22	60-L12E [R]	Fly-through, AR2	1011	120		130		N/A	N/A	X	X	X	X	+1	+4	N/A
	23	40-L12M	Fly-through, AR2	1020	120		130		N/A	N/A		X	X	X	-3	-4	N/A

Notes: Altimeter calibration performed (N3GC +60 ft). Artificial offset was applied for 1,000 ft runs. Used wind matrix climb/descent encounters. O/S collected additional ADS-B data after run 23.

Encounters: 1 – O/S RA, good, 2 – O/S RA descend, int1 RA climb, good, 3 – wind adjust +13s, int1 off course ~130 KIAS, good, 4 – no wind adjust comm., relax VSI, bad, 5 – raised int1 start alt FL130, wind adjust -20s, relax VSI, good, 6 – wind adjust +15s, good, 7 – wind adjust +8s, wind died to 16kts by end, set 1,100 VSI for Ikhana = 1,000 VSI, good, 8 – wind adjust -19s, good, 9 – wind adjust +20s, O/S sped up KIAS, good, 10 – wind adjust +5s, O/S sped up KIAS, good, 11 – wind adjust -10s, sped up KIAS, good, 12 – no wind adjust, good, 13 – wind adjust +12s, good, 14 – wind adjust -26s, climb too early (should have reset), bad, 15 – wind adjust +20s, good, 16 – wind adjust +8s, good, 17 – decision: no wind adjust, O/S early/int1 late (whole run), bad, 18 – wind adjust +12s, late start descent w/overshoot, bad, 19 – wind adjust +5s, good, 20 – wind adjust +18s (opposite of wind matrix), good, 21 – reset, int1 too slow to make CPA, 22 – good, 23 - good

Airspace: No Buckhorn below FL130 and above FL200 (temporary). Did not affect runs.

Baro/Vis: 29.92, clear

Wind: 1 – O/S 274/23, int1 274/27, 3 – O/S 282/15, int1 296/17, 4 – int1 289/20, 5 – int1 265/18, 6 – O/S 282/15, 7 – O/S 285/25, 8 – O/S 270/15, 9 – O/S 285/20, 10 – O/S 290/19, 11 – O/S 300/10, 12 – int1 252/21, 13 – O/S 270/20, int1 252/16, 14 – int1 281/23, 15 – O/S 280/22, 16 – O/S 285/22, 17 – O/S 260/11, 18 – int1 264/13, 19 – int1 288/21, 20 – int1 256/16

Bottom Line: Overall, test points were conducted well. Additional errors were present in the wind matrix that were corrected after this flight. Team was getting into a flow that helped with obtaining more test runs this day.

7.1.3 Flight 3: June 22, 2015

Table 14. Config. 1 Flight 3 Data.

Flight	**3**																
SUT	**AutoResolver**																
Duration	**4.5 hours**																
Intruder(s)	**N3GC**																
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	61-L12E	Follow AR1	0650	120		130		N/A	N/A	X				R007	0	N/A
	2	41-L12M	Follow AR1	0659	120		130		N/A	N/A	X				R007	+5	N/A
	3	63-L12N	Follow AR1	0710	120		130		N/A	N/A	X				R007	+10	N/A
	4	13-L14A	Follow AR1	0722	120		135		N/A	N/A	X				R007	+4	N/A
	5	35-L14C	Follow AR1	0731	120		140		N/A	N/A	X				R277	-	N/A
	6	55-L14D	Follow AR1	0742	120		150		N/A	N/A	X				R287	+3	N/A
	7	15-L15A	Follow AR1	0753	135		160		N/A	N/A	X				L227	0	N/A
	8	37-L15C	Follow AR1	0803	140		160		N/A	N/A	X				L217	-2	N/A
	9	57-L15D	Follow AR1	0812	150		160		N/A	N/A	X				None	+2	N/A
	10	11-L13A	Follow AR1	0822	165		145	TA	N/A	N/A	X				R277	+16	N/A
	11	33-L13C	Follow AR1	0833	165		135	TA	N/A	N/A	X				R277	-7	N/A
	12	53-L13D	Follow AR1	0844	165		150		N/A	N/A	X				R277	+14	N/A
	13	17-L16A	Follow AR1	0854	145		120		N/A	N/A	X				R287	0	N/A
	14	39-L16C	Follow AR1	0905	148		120		N/A	N/A	X				R287	-5	N/A
	15	59-L16D	Follow AR1	0917	148		120		N/A	N/A	X				None	0	N/A
	16	61-L12E	Follow AR2	0928	120		130		N/A	N/A	X				L317	-90	N/A
	17	41-L12M	Follow AR2	0940	120		130		N/A	N/A	X				R277	+15	N/A
	18	63-L12N	Follow AR2	0950	120		130		N/A	N/A	X				R277	+12	N/A
	19	13-L14A	Follow AR2	1002	120		145		N/A	N/A	X				R277	-20	N/A
	20	35-L14C	Follow AR2	1013	120		143		N/A	N/A	X				R267	-15	N/A

Notes: Altimeter calibration performed (N3GC +60 ft). Artificial offset was applied for 1,000 ft runs. Used wind matrix climb/descent encounters. All runs were ADS-B only (due to poor Fusion performance).

Encounters: 1 – int1 ground speed 10-15 low, good, 2 – seems excessive turn, bad, 3 – good, 4 – wind adjust +5s, good, 5 – wind adjust +5s, good, 6 – wind adjust -5s, good, 7 – wind adjust -25s, good, 8 – 29.97 (ground), wind adjust -20s, good, 9 – wind adjust +5s, O/S slow and late, bad, 10 – wind adjust +10s, good, 11 – wind adjust +10s, good, 12 – wind adjust -20s, int1 request reset, good, 13 – wind adjust -5s, maneuver and level off, good, 14 – wind adjust -5s, maneuver and level off, good, 15 – wind adjust +5s, maneuver and level off, O/S request reset (too fast), bad, 16 – CBDR, merged, bad, 17 – O/S request reset, good, 18 – CBDR, merged, bad, 19 – wind adjust 0s, int1 request reset, good, 20 – wind adjust +10s, int1 request reset, good

Airspace: R-2515 FL200 and below, Buckhorn FL100 and above, R-2515 SPORT stay FL120 and above. Did not affect runs.
Baro/Vis: 29.95, clear
Wind: 3 – int1 221/19, 4 – int1 209/7, 5 – int1 207/5, 6 – int1 294/8, 7 – O/S 257/18, int1 204/13, 8 – O/S 237/15, int1 160/3, 9 – O/S 217/8, int1 217/10, 10 – O/S 203/6, int1 194/22, 11 – O/S 224/10, int1 232/13, 12 – O/S 167/6, int1 225/20, 13 – O/S 220/8, int1 223/21, 14 – O/S 217/8, int1 256/12, 15 – O/S 195/7, int1 232/18, 19 – O/S 237/18, int1 180/10, 20 – O/S 244/15, int1 232/14
Bottom Line: Overall, test points were conducted well, but maneuvers were only of "acceptable" quality. Display of VSCS (seen in SAF) was showing identical maneuvers for different encounters. This was thought odd as each encounter was of a new geometry. Wind matrix worked well for this flight day. This flight was the first case where it seemed CPA timing was not as important as intent for maneuvering encounters – algorithm only needed to be alerted, followed by O/S maneuver.

7.1.4 Flight 4: June 24, 2015

Table 15. Config. 1 Flight 4 Data.

Flight	**4**																	
SUT	**CPDS**																	
Duration	**4.7 hours**																	
Intruder(s)	**N3GC**																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	137-L53C	TCAS Advisory	0640	145		137	TA	N/A	N/A	X	X	X		-2	+5	N/A
	2	137-L53C [R]	TCAS Advisory	0650	145	TA/RA	140	TA/RA	N/A	N/A	X	X	X		-5	-6	N/A
	3	137-L53C	TCAS AUTO	0702	145	TA/RA	140	TA/RA	N/A	N/A	X	X	X		+25	0	N/A
	4	146-L54D	TCAS Advisory	0720	120	TA	130	TA	N/A	N/A	X	X	X		-12	-8	N/A
	5	146-L54D [R]	TCAS Advisory	0730	120	TA/RA	125	TA/RA	N/A	N/A	X	X	X		0	+5	N/A
	6	146-L54D	TCAS AUTO	0741	120	TA/RA	125	TA/RA	N/A	N/A	X	X	X		0	0	N/A
	7	140-L55A	TCAS Advisory	0753	135		145		N/A	N/A	X	X	X		+5	+3	N/A
	8	140-L55A [R]	TCAS Advisory	0804	140	TA/RA	145	TA/RA	N/A	N/A	X	X	X		+13	+5	N/A
	9	140-L55A	TCAS AUTO	0813	140	TA/RA	145	TA/RA	N/A	N/A	X	X	X		-2	+3	N/A
	10	151-L56F	TCAS Advisory	0823	125	TA/RA	120	TA/RA	N/A	N/A	X	X	X		-7	-2	N/A
	11	151-L56F	TCAS AUTO	0833	125	TA/RA	120	TA/RA	N/A	N/A	X	X	X		-	0	N/A
	12	115-L32G	Radar CBDR (110)	0841	120	TA/RA	123	TA	N/A	N/A		X			-40	-30	N/A
	13	121-L32G	Radar CBDR (90)	0855	120	TA/RA	123	TA/RA	N/A	N/A	X	X			-	-30	N/A
	14	115-L32G [R]	Radar CBDR (110)	0909	120	TA/RA	124	TA/RA	N/A	N/A	X	X			-30	-60	N/A
	15	117-L53G	Radar CBDR (110)	0923	165	TA/RA	160	TA/RA	N/A	N/A	X	X			-30	-30	N/A
	16	124-L55G	Radar CBDR (90)	0936	170	TA/RA	175	TA/RA	N/A	N/A	X	X			-30	-40	N/A
	17	128-L32A	TCAS Advisory	0955	120	TA/RA	123	TA/RA	N/A	N/A	X	X	X		+7	-1	N/A
	18	128-L32A	TCAS AUTO	1005	120	TA/RA	123	TA/RA	N/A	N/A	X	X	X		+6	+5	N/A
	19	129-L32C	TCAS Advisory	1015	120	TA/RA	123	TA/RA	N/A	N/A	X	X	X		-7	-4	N/A
	20	129-L32C	TCAS AUTO	1025	120	TA/RA	123	TA/RA	N/A	N/A	X	X	X		-3	-7	N/A

Notes: Altimeter calibration performed (N3GC +80 ft).
Encounters: 1 – no RA, bad, 2 – raised int1 start alt FL115, O/S RA climb, good, 3 – raised int1 start alt FL115, O/S RA climb, good, 4 – multiple rolex, no RA, bad, 5 – lowered int1 start alt FL150, O/S RA descend, good, 6 – lowered int1 start alt FL150, O/S RA descend, good, 7 – no RA, bad, 8 – raised O/S start alt FL115, O/S RA descend, good, 9 – raised O/S start alt FL115, O/S RA do not climb, good, 10 – O/S RA do not descend,

good, 11 – O/S RA do not descend, good, 12 – O/S RA do not climb, int1 fast, bad, 13 – O/S RA descend, int1 slow, bad, 14 – angle ~106°, good, 15 – raised int1 start alt FL120, int1 descend 1100 fpm, good, 16 – raised O/S alt FL120, O/S RA do not climb, good, 17 – O/S RA do not climb, good, 18 – O/S RA descend, good, 19 – O/S RA descend, did not descend, bad, 20 – O/S RA descend, good

Airspace: Buckhorn active FL200 and below, later cleared FL120-200. Did not affect runs.

Baro/Vis: 29.91, clear

Wind: 1 – O/S 167/17, int1 160/16, 2 – O/S 152/17, int1 141/20, 3 – O/S 168/9, int1 156/19, 4 – O/S 147/13, int1 195/8, 5 – O/S 134/13, int1 231/6, 6 – O/S 134/13, int1 278/7, 7 – O/S 184/12, int1 188/12, 8 – O/S 185/10, int1 192/10, 9 – O/S 190/10, int1 calm, 10 – O/S 200/10, int1 240/19, 11 – O/S 280/6, int1 calm, 13 – O/S 188/12, int1 188/17, 14 – O/S 192/12, int1 178/18, 15 – O/S 222/13, 219/15, 16 – O/S 169/16, int1 188/11, 17 – O/S 205/16, int1 155/13, 18 – O/S 208/17, int1 calm, 19 – O/S 205/15, int1 161/11, 20 – O/S 209/15, int1 176/21

Bottom Line: Some starting altitudes needed to be raised or lowered (500 ft) real-time in order for aircraft to achieve desired performance and trigger RAs. Once this occurred, the TCAS system was successfully tested and Ikhana performed maneuvers that were expected for the particular encounter, and in the milestone AUTO mode. For radar CBDR encounters, N3GC attempted to use a bearing tool on board their aircraft – although the tool itself was effective, the encounter angle itself was not completely understood by the crew. Thus, several of the radar encounters' relative angle was incorrect. For the encounters where the angle was correct, the radar data was deemed good by the researcher. Altitude redlines were made to proceeding flights cards to meet aircraft performance based on this flight's outcome. CBDR cards were modified for proceeding flights to better highlight how to run this type of encounter.

7.1.5 Flight 5: June 26, 2015

Table 16. Config. 1 Flight 5 Data.

Flight	**5**																
SUT	**CPDS**																
Duration	**4.6 hours**																
Intruder(s)	**N3GC, NASA865**																
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	108-L12A	Radar low alt.	0637	052		062		N/A	N/A		X			-2	+2	N/A
	2	107-L12A	Radar low alt.	0647	042		052		N/A	N/A	X	X			-8	+1	N/A
	3	112-L11A	Radar low alt.	0657	062		052		N/A	N/A	X	X			0	+2	N/A
	4	111-L11A	Radar low alt.	0708	052		042		N/A	N/A	X	X			+9	0	N/A
	5	169-M79X	Fly-through, CPDS	0822	130	TA/RA	134	TA/RA	125		X		X		RT	+10	+5
	6	170-M79X	Fly-through, CPDS	0834	130		134		125		X		X		-	-	-
	7	171-M79X	Fly-through, CPDS	0846	130	TA	134	TA	125		X		X		+2	0	-4
	8	160-M67Q	TCAS Advisory	0858	133	TA/RA	14	TA/RA	13	TA	X	X	X		-	-	-
	9	161-M68Q	TCAS Advisory	0909	137	TA/RA	14	TA/RA	13	TA	X	X	X		0	-	+8
	10	165-L52M	Fly-through, CPDS	0924	120	TA	125	TA	N/A	N/A	X		X		+10	+15	N/A
	11	166-L52M	Fly-through, CPDS	0937	120	TA	125	TA	N/A	N/A	X		X		+10	0	N/A
	12	167-L52M	Fly-through, CPDS	0947	120	TA	125	TA	N/A	N/A	X		X		-9	0	N/A
	13	168-L52M	Follow CPDS	0957	120	TA/RA	125	TA/RA	N/A	N/A	X		X		RT	-3	N/A
	14	164-L42M	Follow CPDS	1007	120	TA/RA	125	RA	N/A	N/A	X		X		LT	0	N/A
	15	132-L31A	TCAS Advisory	1018	123		120		N/A	N/A	X	X	X		-	-	N/A
	16	132-L31A	TCAS AUTO	1028	123		120		N/A	N/A	X	X	X		0	+5	N/A

Notes: Altimeter calibration performed (N3GC +60 ft, NASA865 +190 ft). Additional 200 ft encounters were planned but not performed (TCAS sequential) – alerting achieved with 300 ft separation (runs 8, 9).

Encounters: 1 – good, 2 – good, 3 – good, 4 – good, 5 – O/S was not supposed to maneuver (+not called out), int1 RA climb, good, 6 – int1 heading wrong on maneuver, good, 7 – good, 8 – O/S RA climb, about 20 seconds then O/S RA descend, NO VID int2 on O/S, good, 9 – O/S RA descend, about 8 seconds then O/S RA climb, good, 10 – good, 11 – good, 12 – good, 13 – RA int1 monitor vertical speed, good, 14 – int1 RA adjust vertical speed, good, 15 – O/S RA climb, int1 RA adjust vertical speed, good, 16 – O/S RA climb, int1 RA descend, good

Airspace: Received Buckhorn early FL100-200.

Baro/Vis: 29.99, hazy (due to Lake wildfire)

Wind: 12 – O/S 160/13, int1 158/19, 14 – O/S 169/14, int1 150/11

Bottom Line: Considering the challenging geometries and conditions (weather), this flight collection day was excellent. The first multi-ship live UAS encounter in flight test history was performed (runs 5, 6, 7). First low-altitude radar runs were performed to test DRR on Ikhana (runs 1, 2, 3, 4). The TCAS multi-ship sequential encounters (runs 8, 9) ran smoothly and safely, all triggering expected alerting in advisory mode. Although a mission rule was violated (run 8, no VID), at no point did the pilots or any other team member feel unsafe or that the flight could not continue. Additional, directive guidance was given to pilots concerning VID after run 8 and in proceeding flights.

7.1.6 Flight 6: July 7, 2015

Table 17. Config. 1 Flight 6 Data.

Flight	6																	
SUT	Stratway+																	
Duration	4.8 hours																	
Intruder(s)	N3GC																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	25-L53C	Follow Stratway+	0645	145	TA	130	TA	N/A	N/A		X			RT	0	N/A
	2	46-L53D	Follow Stratway+	0655	145	TA/RA	135	TA/RA	N/A	N/A		X		X	RT	0	N/A
	3	68-L53F	Follow Stratway+	0707	145		120		N/A	N/A	X			X	LT	0	N/A
	4	26-L54C	Follow Stratway+	0717	120	TA	145	TA	N/A	N/A		X		X	RT	0	N/A
	5	47-L54D	Follow Stratway+	0727	120	TA	135	TA	N/A	N/A		X		X	RT	+3	N/A
	6	69-L54F	Follow Stratway+	0736	120		137		N/A	N/A	X			X	LT	+7	N/A
	7	5-L56A	Follow Stratway+	0746	142	TA	125	TA	N/A	N/A		X		X	RT	-2	N/A
	8	6-L56B	Follow Stratway+	0756	141	TA/RA	125	TA/RA	N/A	N/A		X		X	LT	0	N/A
	9	23-L56C	Follow Stratway+	0808	-	TA/RA	125	TA/RA	N/A	N/A	X	X		X	None	-10	N/A
	10	44-L56D	Follow Stratway+	0817	150	TA	125	TA	N/A	N/A	X	X		X	RT	+3	N/A
	11	66-L56F	Follow Stratway+	0825	130		125		N/A	N/A		X			None	+7	N/A
	12	66-L56F [R]	Follow Stratway+	0842	140		125		N/A	N/A		X			LT	early	N/A
	13	1-L42A	Follow Stratway+	0852	120	TA/RA	124	TA/RA	N/A	N/A		X			RT	0	N/A
	14	2-L42B	Follow Stratway+	0902	120	TA/RA	124	RA	N/A	N/A	X	X	X	X	LT	-13	N/A
	15	21-L42C	Follow Stratway+	0912	120	TA/RA	124	TA/RA	N/A	N/A	X	X	X	X	LT	0	N/A
	16	42-L42D	Follow Stratway+	0922	120	TA	124	TA	N/A	N/A	X	X	X	X	LT	0	N/A
	17	64-L42F	Follow Stratway+	0940	120		124		N/A	N/A	X	X	X	X	LT	0	N/A
	18	20-L32A	Follow Stratway+	0950	120	TA	124	TA	N/A	N/A	X	X	X	X	RT	+2	N/A
	19	31-L32C	Follow Stratway+	1005	130	TA/RA	133	TA/RA	N/A	N/A		X			LT	+2	N/A
	20	51-L32D	Follow Stratway+	1015	130	TA	133	TA	N/A	N/A		X			LT	0	N/A
	21	68-L53F	Follow Stratway+	1027	145		125		N/A	N/A		X	X		LT	-1	N/A
	22	69-L54F	Follow Stratway+	1037	120		145		N/A	N/A	X	X	X		LT	early	N/A

Notes: Altimeter calibration performed (N3GC +60 ft). What looked like a level acceleration was performed (should not have been). All climb/descent leg altitudes were redlined prior to flight to achieve “run-in” type encounters for Stratway+.
Encounters: 1 – good, 2 – odd run (O/S maneuver into int1), good, 3 – good, 4 – VSCS split track, band issues (almost terminate run), bad, 5 – vertical velocity noise in Stratway+, good, 6 – good, 7 – split track, good, 8 – int1 RA descend, good, 9 – maintained heading, O/S RA do not descend, int1 RA descend, bad, 10 – split track, good, 11 – maintained heading, O/S fast, bad, 12 – TC push int1 faster (210 KGS), terminate early due to north airspace activity, good, 13 – O/S RA descend, int1 RA climb, good, 14 – O/S RA descend, int1 RA climb, good, 15 – O/S RA do not climb, int1 RA monitor vertical speed, good, 16 – good, 17 – changed Stratway+ sensitivity, laptop problem and multiple rolex, good, 18 – int1 ended at higher altitude (+100 ft), good, 19 – good, 20 – good, 21 – good, 22 - good
Airspace: Multiple calls to SPORT that were unanswered. Stay above FL105 (did not affect runs). SPORT called combat laser, request stay above FL130 (affected runs 19, 20). Later stay above FL100 (did not affect runs).
Baro/Vis: 29.97, clear

Wind: 4 – O/S 170/25, int1 180/19, 7 – O/S 189/7, int1 175/18, 10 – O/S 193/6.5, int1 207/24, 13 – O/S 160/17, int1 176/20, 18 – O/S 178/13, int1 169/20, 19 – O/S 191/19, int1 134/19, 21 – O/S 176/10, int1 191/13
Bottom Line: The bulk of the data was good but the “split tracks” that kept occurring on VSCS were thought too distracting/incorrect for subsequent days. Thus, in proceeding flights the native Stratway+ display was used in the Ikhana GCS instead of the algorithm being fed through VSCS.

7.1.7 Flight 7: July 9, 2015

Table 18. Config. 1 Flight 7 Data.

Flight	7																	
SUT	Stratway+																	
Duration	4.8 hours																	
Intruder(s)	N3GC																	
	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
Data	1	22-L55C	Follow Stratway+	0653	132	TA/RA	145	TA/RA	N/A	N/A		X			R275	-	N/A
	2	43-L55D	Follow Stratway+	0703	125		145		N/A	N/A		X			R050	+2	N/A
	3	65-L55F	Follow Stratway+	0713	127		145		N/A	N/A	X				L060	+20	N/A
	4	24-L57C	Follow Stratway+	0725	122	TA	167	TA	N/A	N/A		X			R265	0	N/A
	5	45-L57D	Follow Stratway+	0735	118	TA	162	TA	N/A	N/A		X			L330	+5	N/A
	6	67-L57F	Follow Stratway+	0743	119		16		N/A	N/A	X				L060	+10	N/A
	7	7-L57A	Follow Stratway+	0755	120	TA	158	TA	N/A	N/A		X	X	X	R270	-	N/A
	8	3-L55A	Follow Stratway+	0807	131		145		N/A	N/A		X	X	X	L200	0	N/A
	9	4-L55B	Follow Stratway+	0819	120	TA	145	TA	N/A	N/A			X	X	L225	+1	N/A
	10	21-L42C	Follow Stratway+	0830	120	TA/RA	124	TA/RA	N/A	N/A	X	X	X	X	R260	0	N/A
	11	42-L42D	Follow Stratway+	0840	120	TA	124	TA	N/A	N/A	X	X	X	X	L330	+5	N/A
	12	64-L42F	Follow Stratway+	0848	120	TA	124	TA	N/A	N/A	X	X	X	X	R130	0	N/A
	13	26-L54C	Follow Stratway+	0900	120		132		N/A	N/A	X	X	X	X	R285	0	N/A
	14	47-L54D	Follow Stratway+	0909	120	TA/RA	126	TA/RA	N/A	N/A		X			L230	-	N/A
	15	47-L54D	Follow Stratway+	0920	120	TA	140	TA	N/A	N/A	X	X	X	X	R030	+4	N/A
	16	22-L55C	Follow Stratway+	0930	131	TA	145	TA	N/A	N/A	X	X	X	X	R270	0	N/A
	17	43-L55D	Follow Stratway+	0940	127		145		N/A	N/A	X	X	X	X	R060	0	N/A
	18	65-L55F	Follow Stratway+	0948	-		145		N/A	N/A		X			L050	early	N/A
	19	24-L57C	Follow Stratway+	0958	124	TA	168	TA	N/A	N/A	X	X	X	X	R270	0	N/A
	20	45-L57D	Follow Stratway+	1007	-	TA/RA	-	TA	N/A	N/A	X	X	X	X	R055	+5	N/A
	21	67-L57F	Follow Stratway+	1016	140	TA	145	TA	N/A	N/A			X		None	-	N/A
	22	25-L53C	Follow Stratway+	1026	145	TA	130	TA	N/A	N/A	X				R270	-9	N/A
	23	46-L53D	Follow Stratway+	1036	145	TA/RA	125	TA	N/A	N/A	X				R045	0	N/A

Notes: Altimeter calibration performed (N3GC +60 ft). All climb/descent leg altitudes were redlined prior to flight to achieve “merge intent” type encounters for Stratway+. Used native Stratway+ display in Ikhana GCS.
Encounters: 1 – O/S RA descend, int1 RA climb, TC slowed int1 10kts, good, 2 – O/S large deviation from CPA, good, 3 – TC slowed int1 10kts, good, 4 – performed maneuver but did not turn back, bad, 5 – good, 6 – TC slowed int1 10kts, resumed speed at turn, good, 7 – good, 8 – good, 9 – good, 10 – O/S RA do not climb, int1 RA monitor speed, 11 – good, 12 – good, 13 – good, 14 – O/S RA do not climb, int1 RA maintain vertical speed, good, 15 – late turn back on course, good, 16 – good, 17 – good, 18 – terminate early due to no airspace north, good, 19 – good, 20 – 200 ft excursion, O/S RA descend, good, 21 – no banding, bad, 22 – good, 23 – O/S RA climb, good

Airspace: SPORT stay FL105-200 (did not affect runs), C-17 FL060 and below (did not affect runs). FT3 multiple spill-outs north of airspace (coordinated minutes prior with SPORT).
Baro/Vis: 29.81, haze layer, good vis. at altitude
Wind: 1 – O/S 220/15.5, int1 235/12, 4 – O/S 191/17, int1 228/24, 7 – O/S 193/16, int1 233/26, 8 – O/S 206/15, int1 238/17, 11 – O/S 174/11, int1 209/9, 13 – O/S 180/19, int1 250/16, 15 – O/S 200/12, int1 234/16, 16 – O/S 205/15, int1 195/16, 18 – O/S 190/11, int1 218/7, 19 – O/S 200/14, int1 237/19, 22 – O/S 220/20, int1 180/21
Bottom Line: Overall, encounters were good and using the native Stratway+ display helped the O/S pilots better understand the banding which they needed to fly. Intruder aircraft had timing issues this day (caused several rolex calls) but did not affect runs.

7.1.8 Flight 8: July 10, 2015

Table 19. Config. 1 Flight 8 Data.

Flight	**8**																	
SUT	**Stratway+, CPDS**																	
Duration	**4.6 hours**																	
Intruder(s)	**N3GC, NASA865**																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	8-M59Q	Follow Stratway+	0646	130	TA	135	TA	125			X			L330	+1	+3
	2	8-M59Q	Follow Stratway+	0656	130	TA	135	TA	125		X	X	X	X	L040	+2	+4
	3	28-M59V	Follow Stratway+	0705	130	TA	135	TA	125	TA		X			R290	0	+8
	4	28-M59V	Follow Stratway+	0715	130	TA	135	TA	125	TA	X	X	X	X	R290	+5	+4
	5	71-M59W	Follow Stratway+	0725	130	TA	135	TA	125	TA	X				L370	+4	+11
	6	71-M59W	Follow Stratway+	0735	130	TA	135		125	TA	X	X	X	X	L300	+3	+5
	7	9-M59U	Follow Stratway+	0745	130		135		125	TA		X			R370	+1	0
	8	27-M59R	Follow Stratway+	0755	130	TA/RA	135	TA/RA	125			X			R310	+6	0
	9	48-M59S	Follow Stratway+	0805	130	TA	135	TA	125	TA		X			R330	+1	0
	10	70-M59T	Follow Stratway+	0815	130	TA/RA	135	TA/RA	125	TA	X				L270	+10	0
	11	9-M59U	Follow Stratway+	0827	130	TA/RA	135		125	TA	X	X	X	X	R300	0	+5
	12	27-M59R	Follow Stratway+	0854	130	TA	135	TA	125		X	X	X	X	R270	+1	-4
	13	48-M59S	Follow Stratway+	0905	130	TA	135	TA	125	TA	X	X	X	X	R285	+2	0
	14	70-M59T	Follow Stratway+	0915	130	TA	135	TA	125	TA	X	X	X	X	R303	+4	+5
	15	63-L12N	Follow Stratway+	0927	120		130		N/A	N/A	X				R330	-20	N/A
	16	63-L12N	Follow Stratway+	0935	120		130		N/A	N/A	X	X	X	X	R302	-15	N/A
	17	63-L12N	Follow Stratway+	0943	120		130		N/A	N/A		X			R300	-15	N/A
	18	122-L31G	Radar CBDR (90)	0953	120	TA/RA	123	TA/RA	N/A	N/A		X		X	-40	-50	N/A
	19	122-L31G [R]	Radar CBDR (90)	1010	120	TA/RA	123	TA/RA	N/A	N/A		X		X	-	-	N/A
	20	125-L54G	Radar CBDR (90)	1022	110	TA/RA	115	TA/RA	N/A	N/A		X		X	-	-	N/A

Notes: Altimeter calibration performed (N3GC +60 ft, NASA865 +100 ft). All climb/descent leg altitudes were redlined prior to flight to achieve “merge intent” type encounters for Stratway+. Used native Stratway+ display in Ikhana GCS. TCAS on NASA865 showed Ikhana 300 ft high. Runs 18, 19, 20 radar runs with CPDS display.
Encounters: 1 – good, 2 – good, 3 – good, 4 – good, 5 – good, 6 – good, 7 – good, int2 late TA from int1, 8 – int1 RA monitor vertical speed, good, 9 – good, int2 late TA from int1, 10 – O/S RA maintain level, int1 monitor/adjust vertical speed, int2 TA from int1, good, 11 – O/S RA do not descend, int2 TA from int1, 12 – good, 13 – good, int2 TA from int1, 14 – good, int2 TA from int1, 15 – good, 16 – good, 17 – good, 18 – int1 RA descend,

int1 (fast) ahead of O/S, bad, 19 – angle about 80° instead of 90°, O/S RA climb, int1 RA descend, good, 20 – angle 95° most of run and 110° at the end, O/S RA descend, int1 RA monitor vertical speed, good

Airspace: Stay below FL230 Buckhorn (did not affect runs). Spin aircraft FL110 and above 45min (did not affect runs).

Baro/Vis: 29.86, clear

Wind: 1 – O/S 270/3, 9 – O/S 265/11, int1 223/5, int2 calm, 15 – O/S 145/10, int1 194/15

Bottom Line: Overall data was good. Second day of multi-ship encounters went smoothly as the first. Adjusting the vertical profile caused a lot more alerting for Stratway+ (good). Runs 18, 19, 20 gathered good radar data due to change in altitude and better understanding of angle requirements from pilots.

7.1.9 Flight 9: July 21, 2015

Table 20. Config. 1 Flight 9 Data.

Flight	9																	
SUT	Stratway+																	
Duration	4.8 hours																	
Intruder(s)	NASA850, NASA865																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	72-H42A	Follow Stratway+	0705	120	TA	124		N/A	N/A		X	X	X	L055	+20	N/A
	2	72-H42A	Follow Stratway+	0715	120	TA/RA	124		N/A	N/A		X	X		L045	-	N/A
	3	73-H42C	Follow Stratway+	0723	120	TA/RA	124	TA	N/A	N/A		X	X	X	R270	+25	N/A
	4	73-H42C	Follow Stratway+	0733	120	TA/RA	124		N/A	N/A		X	X		L215	-6	N/A
	5	74-H42D	Follow Stratway+	0741	120	TA	124		N/A	N/A		X	X	X	L330	-	N/A
	6	74-H42D	Follow Stratway+	0751	120	TA	124	TA	N/A	N/A		X	X		L320	-	N/A
	7	75-H42F	Follow Stratway+	0800	120		124		N/A	N/A		X	X	X	L045	-5	N/A
	8	75-H42F	Follow Stratway+	0808	120	TA/RA	124		N/A	N/A		X	X		L010	0	N/A
	9	23-L56C	Follow Stratway+	0835	145	TA/RA	125		N/A	N/A	X	X	X	X	R270	-	N/A
	10	44-L56D	Follow Stratway+	0843	142	TA	125	TA	N/A	N/A	X	X	X	X	L335	-10	N/A
	11	66-L56F	Follow Stratway+	0851	152		125	TA	N/A	N/A	X	X	X	X	L060	-	N/A
	12	31-L32C	Follow Stratway+	0901	120	TA/RA	123	TA	N/A	N/A	X	X	X	X	L220	-5	N/A
	13	51-L32D	Follow Stratway+	0910	120	TA	123	TA	N/A	N/A	X	X	X	X	R020	0	N/A
	14	23-L56C	Follow Stratway+	0926	145		125	TA	N/A	N/A		X			L200	-20	N/A
	15	44-L56D	Follow Stratway+	0935	152		125	TA	N/A	N/A		X			L330	+5	N/A
	16	66-L56F	Follow Stratway+	0944	145	TA/RA	125	TA	N/A	N/A		X			L045	-	N/A
	17	66-L56F	Follow Stratway+	0955	152		125	TA	N/A	N/A		X		X	L030	-20	N/A
	18	76-M59R	Follow Stratway+	1015	130	TA/RA	135	TA	125	TA		X	X	X	L220	-	-
	19	76-M59R	Follow Stratway+	1025	130	TA	135		125	TA		X	X		R295	-	-
	20	77-M59S	Follow Stratway+	1035	130	TA	135		125	TA		X	X	X	R340	+10	0

Notes: Altimeter calibration performed (NASA850 +140 ft, NASA865 +100 ft). All climb/descent leg altitudes were redlined prior to flight to achieve “merge intent” type encounters for Stratway+. Used native Stratway+ display in Ikhana GCS. Runs 1-12 int1 NASA850, runs 9-17 int1 NASA865, runs18-20 int1 NASA850, int2 NASA865.

Encounters: 1 – good, 2 – good, 3 – good, 4 – O/S RA do not climb, good, 5 – slow to develop and int1 lagging, bad, 6 – good, 7 – became tail chase run, good, 8 – good, 9 – TC increase int1 10 kts, int1 started FL120 instead of 125, good, 10 – O/S fast, int1 started FL123 instead of 125, bad, 11 – int1 off course on IP, bad, 12 – O/S RA do not climb, good, 13 – good, 14 – good, 15 – int1 fast TC request go card speed, good, 16 – O/S RA

do not descend, O/S fast, int1 increased speed, good, 17 – good, 18 – good, 19 – good, 20 – good

Airspace: Fly below FL200 (did not affect runs), received Buckhorn FL100-200.

Baro/Vis: 29.97, clear

Wind: 12 – O/S 212/5

Bottom Line: This was another successful flight day for Stratway+ and the first ever high-speed multi-ship encounters. As the previous multi-ship encounters, these went surprisingly smoothly and gave good data for the researcher. Although int1 was late/early to the CPA for many of the encounters, numerous of these runs were successful due to the "intent" of the intruder – Stratway+ displayed good alerting for the O/S pilot.

7.1.10 Flight 10: July 22, 2015

Table 21. Config. 1 Flight 10 Data.

Flight	10																	
SUT	AutoResolver																	
Duration	3.4 hours																	
Intruder(s)	NASA865																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	41-L12M	Follow AR1	0635	120		130	TA	N/A	N/A	X				280	-15	N/A
	2	63-L12N	Follow AR1	0645	120	TA	130	TA	N/A	N/A	X				280	-20	N/A
	3	61-L12E	Follow AR1	0655	120	TA	130	TA	N/A	N/A	X				R010	+5	N/A
	4	13-L14A	Follow AR1	0705	120	TA	144	TA	N/A	N/A	X				R280	-8	N/A
	5	35-L14C	Follow AR1	0715	120	TA	147	TA	N/A	N/A	X				R280	-3	N/A
	6	55-L14D	Follow AR1	0725	120	TA	147	TA	N/A	N/A	X				L320	-	N/A
	7	15-L15A	Follow AR1	0735	138		160		N/A	N/A	X				L230	0	N/A
	8	37-L15C	Follow AR1	0745	135		160		N/A	N/A	X				R270	-25	N/A
	9	57-L15D	Follow AR1	0755	132		160		N/A	N/A	X				L330	+8	N/A
	10	11-L13A	Follow AR1	0805	165	TA	140	TA	N/A	N/A	X				R270	0	N/A
	11	33-L13C	Follow AR1	0815	165		138		N/A	N/A	X				R280	+3	N/A
	12	53-L13D	Follow AR1	0825	165	TA	140	TA	N/A	N/A	X				L330	+12	N/A
	13	18-L12A	Fly-through, AR1	0835	120		130	TA	N/A	N/A		X		X	Some	-	N/A
	14	29-L12C	Fly-through, AR1	0845	120		130	TA	N/A	N/A		X		X	None	-4	N/A
	15	49-L12D	Fly-through, AR1	0855	120		130	TA	N/A	N/A		X		X	-30	+9	N/A
	16	18-L12A	Fly-through, AR1	0905	120		130		N/A	N/A	X	X	X	X	+12	+10	N/A
	17	29-L12C	Fly-through, AR1	0915	120		130	TA	N/A	N/A	X	X	X	X	+5	-4	N/A

Notes: No altimeter calibration (all runs >500 ft). Artificial offset was applied for 1,000 ft runs.

Encounters: 1 – good, 2 – good, 3 – good, 4 – wind adjust 0s, good, 5 – wind adjust +20s, good, 6 – wind adjust -10s, good, 7 – wind adjust -10s, O/S kept climbing after maneuver, good, 8 – wind adjust -20s, O/S kept climbing after maneuver, good, 9 – wind adjust +20s, good, 10 – wind adjust -5s, int1 max performance on climb, good, 11 – wind adjust +20s, good, 12 – wind adjust -10s, good, 13 – intermittent headings, fly-through, bad, 14 – no headings, fly-through, bad, 15 – both aircraft too fast, O/S arrive early, int1 corrected, bad, 16 – O/S airspeed low at start of run, good, 17 – good

Airspace: Buckhorn received FL100-200, F-35 at FL220 (did not affect runs). Later in day stay FL110-170 (did not affect runs).

Baro/Vis: 29.86, clear

Wind: 4 – O/S 215/15, int1 168/38, 5 – O/S 220/14, int1 180/26, 6 – O/S 175/13, int1 187/30, 7 – O/S 210/15, int1 180/20, 8 – O/S 210/20, int1 180/25, 9 – O/S 170/15, int1 230/24, 10 – O/S 210/20, int1 160/30, 11 – in1 180/25, 12 – O/S 200/20, int1 190/22

Bottom Line: Overall it was a good, smooth day of data collection. This day had no aborts, rolex calls, or resets – a first for FT3. The wind matrix worked well for the climb/descent encounters.

7.1.11 Flight 11: July 24, 2015

Table 22. Config. 1 Flight 11 Data.

Flight	**11**																	
SUT	**CPDS**																	
Duration	**3.2 hours**																	
Intruder(s)	**NASA865**																	
Data	#	Scenario	Type	COMEX	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	ADS-B	RDR	TCAS	TRC	O/S	Int1	Int2
	1	168-L52M	Follow CPDS	0633	120	TA	125	TA	N/A	N/A	X				R275	-2	N/A
	2	164-L42M	Follow CPDS	0643	120	TA/RA	124	TA	N/A	N/A	X				L250	+13	N/A
	3	159-L57D	TCAS Advisory	0652	140	TA/RA	145	TA	N/A	N/A	X	X	X		+7	+7	N/A
	4	130-L32D	TCAS Advisory	0702	120	TA/RA	123	TA	N/A	N/A	X	X	X		+10	+16	N/A
	5	131-L32F	TCAS Advisory	0710	120	TA/RA	123	TA	N/A	N/A	X	X	X		+7	-3	N/A
	6	152-L32B	TCAS Advisory	0720	120	TA/RA	123	TA	N/A	N/A	X	X	X		+10	+7	N/A
	7	153-L32G	TCAS Advisory	0730	120	TA/RA	123	TA	N/A	N/A	X	X	X		+2	+5	N/A
	8	154-L32H	TCAS Advisory	0738	120	TA/RA	123	TA	N/A	N/A	X	X	X		+15	+15	N/A
	9	155-L31B	TCAS Advisory	0747	123	TA/RA	120	TA	N/A	N/A	X	X	X		-	-	N/A
	10	156-L31G	TCAS Advisory	0756	123	TA/RA	120	TA	N/A	N/A	X	X	X		+5	+1	N/A
	11	157-L31H	TCAS Advisory	0805	123	TA/RA	120		N/A	N/A	X	X	X		+5	+9	N/A
	12	127-L12P	Radar Zig Zag	0815	120		130	TA	N/A	N/A		X		X	+3	+10	N/A
	13	116-L31G	Radar CBDR (110)	0824	123	RA	120	TA	N/A	N/A		X		X	-	-	N/A
	14	135-L31F	TCAS Advisory	0832	123	TA/RA	120	TA	N/A	N/A	X	X	X		+8	+1	N/A
	15	126-L56G	Radar CBDR (90)	0842	115	TA/RA	110	TA	N/A	N/A		X		X	-30	-32	N/A
	16	120-L56G	Radar CBDR (110)	0856	115	RA	110		N/A	N/A		X		X	-20	-30	N/A

Notes: Altimeter calibration performed (NASA865 +100 ft).

Encounters: 1 – virtual offset 500 ft good, 2 – O/S RA descend, good, 3 – O/S RA do not climb, good, 4 – O/S RA do not climb, good, 5 – O/S RA do not climb, good, 6 – O/S RA do not climb, good, 7 – O/S RA descend (before run start), O/S RA descend, int1 fly 190kts per TC, 8 – O/S RA do not climb, good, 9 – O/S RA climb to FL130, good, 10 – O/S RA climb FL130, int1 on O/S camera, good, 11 – O/S RA do not descend (before run start), O/S RA climb to FL130, good, 12 – lagged slightly, good, 13 – O/S RA climb, outside radar field of view, bad, 14 – O/S RA climb, good, 15 – O/S RA do not descend, good, 16 – O/S RA do not descend, int1 hold 200kts per TC, good

Airspace: Buckhorn received FL100-200.

Baro/Vis: 29.92, slight haze

Wind: Alt Cal – O/S 230/25

Bottom Line: An additional day of data collection of CPDS and radar encounters was well-received. Due to the previous practice of doing these types of encounters, the aircrews and ops team were well-prepared and the data collected good. Although the “Zig-Zag” (run 12) encounter was expected to be more of an S-turn, the researchers were still pleased with the data received. The extra TCAS encounters also allowed all

geometries shown on the “pinwheel” (Figure 28 and Figure 29) to be flown. This particular day also used the “wing flash” (run 13) technique to acquire VID, something that was considered for future testing.

7.2 Configuration 2

Configuration 2 flights were conducted from July 13, 2015, to August 12, 2015. Table 23 shows a summary of these flight days. A total of 12 preparation flights (Combined Systems Test (CST), Inertial Navigation System (INS), Rehearsal type flights) and 3 data collection flights were performed. As mentioned, the system was not ready for test and did not meet perceived requirements after these 3 runs. Thus, additional data runs were cancelled for Configuration 2 only.

For the rehearsal runs, a truncated route was flown on some flight days. Data runs flew the entire route. Additionally, an altimeter calibration was not performed for Configuration 2 since the aircraft were simulating a normal flight environment.

GRC flights are Glenn only as the participant (NASA608); CSTs, Rehearsals, and Data Flights involved Glenn, Armstrong, and Ames.

Table 23. Configuration 2 Flights.

Flight	Date	Day of Week	System Under Test	Encounter Types	Planned LIVE Encounters	Flown LIVE Encounters	LIVE Points Achieved	Virtual Points Flown
GRC 1	13-Jul-15	M	CNPC	(None)	0	0	0	0
CST 1	16-Jul-15	Th	CNPC	Targets of Opportunity	0	0	0	0
CST 2	28-Jul-15	Tu	CNPC	Live	4	2	0	0
GRC 2	29-Jul-15	W	INS	(None)	0	0	0	0
CST 3	29-Jul-15	W	CNPC	(None)	0	0	0	0
GRC 3	30-Jul-15	Th	CNPC	(None)	0	0	0	0
Rehearsal 1	3-Aug-15	M	CNPC	Live	8	4	0	0
GRC 4	4-Aug-15	Tu	CNPC	(None)	0	0	0	0
CST 4	4-Aug-15	Tu	CNPC	Live, Virtual	4	2	0	2
CST 5	5-Aug-15	W	CNPC	Live, Virtual	6	5	0	9
Rehearsal 2	6-Aug-15	Th	CNPC	(None)	8	0	0	0
Rehearsal 3	7-Aug-15	F	CNPC	Live	8	1	0	0
Data 1	10-Aug-15	M	HSI/RGCS	Live, Virtual	8	8	7	11
Data 2	11-Aug-15	Tu	HSI/RGCS	Live, Virtual	8	8	6	9
Data 3	12-Aug-15	W	HSI/RGCS	Live, Virtual	8	8	5	10
Data 4	13-Aug-15	Th	HSI/RGCS	CANCELLED				
Data 5	17-Aug-15	M	HSI/RGCS	CANCELLED				
Data 6	18-Aug-15	Tu	HSI/RGCS	CANCELLED				
Data 7	19-Aug-15	W	HSI/RGCS	CANCELLED				
Data 8	20-Aug-15	Th	HSI/RGCS	CANCELLED				
Data 9	21-Aug-15	F	HSI/RGCS	CANCELLED				
Data 10	24-Aug-15	M	HSI/RGCS	CANCELLED				
				Totals	**62**	**38**	**18**	**41**

7.2.1 Flight 1: July 13, 2015

Table 24. Config 2 Flight 1 Data.

Flight	GRC 1
SUT	CNPC
Duration	3.1 hours
Intruder(s)	None

Notes: RF Characterization Flight, NASA608 flew the Fireline route once as planned to gather data on the Control and Non-Payload Communication (CNPC) RF radiation pattern. The Fireline route was flown a second time with a 10-mile buffer to account for expected deviations during the Configuration 2 Flight Test.

7.2.2 Flight 2: July 16, 2015

Table 25. Config 2 Flight 2 Data.

Flight	CST 1
SUT	CNPC
Duration	1.3 hours
Intruder(s)	None

Notes: Initial system checkout flight to verify command and control function with RGCS and establish valid data flow to the LVC environment from the ADS-B system using targets of opportunity. Issues were observed: 1. Up to 15 second delay from RGCS command to NASA608 response. 2. ADS-B targets were incorrectly displayed on the VSCS and LVC systems. ADS-B traffic was stacked in columns.

7.2.3 Flight 3: July 28, 2015

Table 26. Config 2 Flight 3 Data.

Flight	CST 2
SUT	CNPC
Duration	3.1 hours
Intruder(s)	NASA865

Notes: Flight to verify ADS-B issues were fixed. Issues observed: 1. Remote GRC team unavailable to start Vehicle Specific Module (VSM) scripts. 2. INS state information stale. 3. Research computer C2 script crashed multiple times. 4. ADS-B traffic data exhibits incorrect conversion to lat/lon. 5. Airspeed not shown on VSCS. 6. LVC Gateway crashed after 1 minute of initializing the GRC VSM script.
Encounters: NASA865 practiced first leg of route for int2 at FL144 while troubleshooting issues for NASA608. COMEX 0820 performed encounter for WP2 as int1. Performed encounter for WP15 as int1.
Airspace: Some activity, moved NASA865 to int1 holding and route.
Baro/Vis: 29.92, hazy but workable
Wind: WP2 encounter int1 – 320/11
Bottom Line: For the intruder, it was easier to skip through to waypoints and save time instead of following the pattern on the flight cards. Calls were being made in minutes and

seconds to CPA, but it was mentioned by the pilots they preferred whole minutes (which was difficult to implement). From an operational perspective, all participants need to be ready at flight time. This was mitigated for future flights.

7.2.4 Flight 4: July 29, 2015

Table 27. Config 2 Flight 4 Data.

Flight	GRC 2
SUT	INS
Duration	2 hours
Intruder(s)	None

Notes: GRC led flight test to troubleshoot INS issues observed during last flight.
Encounters: None.

7.2.5 Flight 5: July 29, 2015

Table 28. Config 2 Flight 5 Data.

Flight	CST 3
SUT	CNPC
Duration	1.85 hours
Intruder(s)	None

Notes: RGCS/LVC systems connected for 30 minutes at the end of the flight. Issues observed: 1. LVC Gateway software crashed multiple times at around 1 minute after GRC VSM traffic script was started. 2. ARC Multi Aircraft Control System (MACS) observer station never received O/S data.
Encounters: None.

7.2.6 Flight 6: July 30, 2015

Table 29. Config 2 Flight 6 Data.

Flight	GRC 3
SUT	CNPC
Duration	1.1 hours
Intruder(s)	None

Notes: GRC led flight test to troubleshoot LVC issues. Afternoon system checkout flight cancelled due to weather.
Encounters: None.

7.2.7 Flight 7: August 3, 2015

Table 30. Config 2 Flight 7 Data.

Flight	**Rehearsal 1**										
SUT	**CNPC**										
Duration	**3.3 hours**										
Intruder(s)	**NASA7, N3GC**										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1637										
	1	ENC1	Live	16:38:58	140		136	TA	N/A	N/A	-
	2	ENC2	Live	16:45:36	140		N/A	N/A	144	TA/RA	16:46:15 Left turn, int2 RA climb 100ft
	3	ENC3	Live	17:06:00	140		136	TA	N/A	N/A	16:57:29 Left turn
	4	ENC4	Live	17:07:30	140		N/A	N/A	144	TA	17:10:40 Left turn

Notes: No virtual encounters, LVC gateway problems at beginning of flight day. Multiple system restarts. NASA608 originally could not go into nav. mode for any runs.
Encounters: 1 – no lateral offset, bad, 2 – no VID, bad, 3 – good, 4 - good
Airspace: No data.
Baro/Vis: 29.88, changed to 29.85 at 1630
Wind: O/S 220/20, int1 250/13, int2 197/11
Bottom Line: Although it was useful to practice the live encounters, to do a full rehearsal, virtual traffic would have been required as well.

7.2.8 Flight 8: August 4, 2015

Table 31. Config 2 Flight 8 Data.

Flight	**GRC 4**
SUT	**CNPC**
Duration	**2.8 hours**
Intruder(s)	**None**

Notes: Good O/S data and traffic from the VSM. Heading/altitude/speed changes looked good.
Encounters: None.

7.2.9 Flight 9: August 4, 2015

Table 32. Config 2 Flight 9 Data.

Flight	**CST 4**										
SUT	**CNPC**										
Duration	**2.9 hours**										
Intruder(s)	**N3GC**										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1707										
	1	ENC2	Live	17:13:45	140		N/A	N/A	144	TA/RA	17:12:43 Left turn, int2 RA climb
	2	ENC4	Live	17:36:00	140		N/A	N/A	144	TA	17:31:59 Left turn
	Fireline 2 - COMEX 1808										
	1	VE1	Virtual		140		(140)		N/A	N/A	All virtual encounters

Notes: Good live traffic, bad virtual. Inertial Measurement Unit (IMU) data was stale on multiple occasions. NASA608 was able to go into nav. mode.
Encounters: Fireline1: 1 – good, 2 – good; Fireline 2: all virtual, only for testing scripts

Airspace: Predator FL100-210, F-18s, did not affect runs.
Baro/Vis: 29.89, ENC4 29.90, hazy
Wind: int2 237/27, ENC4 int2 226/30
Bottom Line: Actual performance for NASA608 was approximately 500 fpm (as opposed to required 1,000 fpm). On this flight day, it became absolutely clear there was disconnect between the systems here at AFRC and those at/near GRC. What should have been the second day of data collection was the 9th check flight.

7.2.10 Flight 10: August 5, 2015

Table 33. Config 2 Flight 10 Data.

Flight	CST 5										
SUT	CNPC										
Duration	3 hours										
Intruder(s)	N3GC										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1528										
	1	VE1	Virtual		140		-		N/A	N/A	Virtual intruder passed too early.
	2	ENC1	Live	15:31:14	140		136	TA	N/A	N/A	15:33:34 Left turn (due to WP or command?)
	3	ENC2 (virt)	Virtual		140		(144)		N/A	N/A	15:38:30 Right turn
	4	ENC3	Live	15:42:05	140		136	TA	N/A	N/A	15:39:18 Left turn, climb to 145 (later)
	5	VE2	Virtual		140		-		N/A	N/A	Fly-through WP7 to WP9
	Fireline 2 - COMEX 1603										
	1	VE1	Virtual		140		(145)		N/A	N/A	Fly-through WP1 to WP2
	2	ENC1	Live	16:05:58	140		136	TA	N/A	N/A	16:07:14 Right turn and climb
	3	ENC2 (virt)	Virtual		148		(144)		N/A	N/A	Descend 140, turn left
	4	VE2	Virtual		140		-		N/A	N/A	Fly-through
	Fireline 3 - COMEX 1636										
	1	VE1	Virtual		140		(145)		N/A	N/A	Fly-through
	2	ENC1	Live	16:40:02	141		136	TA	N/A	N/A	16:40:46 Expect climb
	3	VE2	Virtual		138		(144)		N/A	N/A	16:45:50 Left turn, climb to 140
	4	VE3	Virtual		140		(144)		N/A	N/A	Right turn
	5	ENC4	Live	16:53:00	140		N/A	N/A	154		16:57:01 Right turn

Notes: Stale tracks on LVC system. Even after reboot, VSCS stale data. NASA608 was receiving commands from RGCS late or did not see them. N3GC acted as int1 for Fireline1, in1 for Fireline2, and both int1/int2 for Fireline3. At end of flight, NASA608 was asked to fly a cardinal direction (due west) but this did not look correct in any of the ground displays.
Encounters: Fireline1: 1 – stale data, bad, 2 – int1 late, bad, 3 – good, 4 – good, 5 – RGCS did not have control of NASA608, bad, Fireline2: 1 – good, 2 – good, 3 – good, 4 – good, Fireline3: 1 – good, 2 – good, 3 – good, 4 – good, 5 – int2 climbed to check vertical velocity
Airspace: F-35s with tanker coming in to R-2515, may not use airspace for up to 2 hours (did not affect runs).
Baro/Vis: 29.91, good
Wind: int1 227/29, Fireline2 ENC1 int1 199/22, Fireline3 ENC1 int1 225/24
Bottom Line: Due to the fuel capacity of the O/S, 3 full runs would not be possible for any of the data runs as planned. Either the Fireline had to be truncated (as was done this flight day) or less runs could be performed per day.

7.2.11 Flight 11: August 6, 2015

Table 34. Config 2 Flight 11 Data.

Flight	Rehearsal 2
SUT	CNPC
Duration	1.1 hours
Intruder(s)	NASA865, N3GC

Notes: Encounters were cancelled due to weather. All aircraft flew to altitude but could not establish VMC. At end of flight, NASA608 flew on its own to troubleshoot magnetic course problem.

Encounters: None.

Airspace: No data.

Baro/Vis: 29.95, virga/rain, clouds at FL145

Wind: No data.

Bottom Line: The weather was too poor to perform encounters this day. This was unfortunate since it seemed that this would be the first day where all systems are functional.

7.2.12 Flight 12: August 7, 2015

Table 35. Config 2 Flight 12 Data.

Flight	Rehearsal 3
SUT	CNPC
Duration	2.8 hours
Intruder(s)	NASA865, N3GC

Notes: Began as a rehearsal flight but turned more into a CST. Ames was showing traffic somewhere close to the North Pole.

Encounters: N3GC RTB 1641. Only flew a partial encounter due to problems with scripts. COMEX was set to 1731 and a 500 fpm descent (FL140 to 136) by NASA865 at ENC2 was performed. TA received.

Airspace: F-35 NOTAM, but cancelled (did not affect runs). Affected takeoff time: 1530 as opposed to 1430.

Baro/Vis: 29.84

Wind: 265/37

Bottom Line: Continuing troubleshooting entire system since software changes were made on NASA608 computer without informing other team members. During the encounter, TC/TD were uncertain if visual had been picked up since a “negative visual” was called. A visual was picked up after by the pilots, but there was still uncertainty on the ground. Thus it was communicated to only call positive visuals during flights.

7.2.13 Flight 13: August 10, 2015 – Data Collection 1

Table 36. Config 2 Flight 13 Data.

Flight	**Data Collect 1**										
SUT	**HSI**										
Duration	**2.8 hours**										
Intruder(s)	**NASA865, N3GC**										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1510										
	1	VE1	Virtual		140		(145)		N/A	N/A	Clear of conflict 15:12:56
	2	ENC1	Live	15:45:15	141		136	TA	N/A	N/A	15:16:03 O/S turned right
	3	ENC2	Live	15:17:15	141		N/A	N/A	145	TA	15:19:39 turning left
	4	VE2	Virutal		141		-		N/A	N/A	Left turn
	5	VE3	Virtual		141		(145)		N/A	N/A	-
	6	VE3.5	Virtual		141		-		N/A	N/A	Fly-through
	7	VE4	Virtual		141		(143)		N/A	N/A	15:36:07 L273
	8	VE5	Virtual		141		(135)		N/A	N/A	Fly-through
	9	ENC3	Live	15:41:37	141		137	TA	N/A	N/A	17:04:01 RT
	10	ENC4	Live	15:42:39	141		N/A	N/A	145	TA/RA	15:50:42 L248, int2 O/S RA climb 100ft
	Fireline 2 - COMEX 1610										
	1	VE1	Virtual		141		(145)		N/A	N/A	Fly-through
	2	ENC1	Live	16:12:48	141	TA	137	TA	N/A	N/A	16:15:06 R168
	3	ENC2	Live	16:17:12	141	TA	N/A	N/A	144	TA	16:21:43 R129
	4	VE2	Virtual		141		(145)		N/A	N/A	16:29:32 L107
	5	VE3	Virtual		141		(144)		N/A	N/A	16:34:33 L263
	6	VE4	Virtual		141		(145)		N/A	N/A	Fly-through
	7	VE5	Virtual		141		(135)		N/A	N/A	Fly-through
	8	ENC3	Live	16:38:14	141		(137)	TA	N/A	N/A	16:41:46 R326, South 319
	9	ENC4	Live	16:40:49	141		N/A	N/A	145	TA	16:47:13 R344

Notes: NASA865 was seeing NASA608 200 ft above.
Encounters: Fireline1: 1 – good, 2 – course correction, bad, 3 – good, 4 – good, 5 – good, 6 – good, 7 – good, 8 – good, 9 – good, 10 – some stale data on RGCS, int2 RA climb 100 ft, good; Fireline2: 1 – good, 2 – good, 3 – good, 4 – good, 5 – good, 6 – good, 7 – good, 8 – good, 9 – good
Airspace: F-16 south of HWY58, could not use WP5 for short time (did not affect runs).
Baro/Vis: 29.86, clear at FL140, haze at FL120 and below
Wind: int2 152/19, Fireline2 int2 ENC2 201/28
Bottom Line: Overall, it was a good flight day. A few problems were discovered, like turning prior to a WP 5 versus of flying into it – what the researchers expected and what was done did not coincide. Additionally, ENC4 was expected to be more of a “beak to beak” encounter. A correction was made to the flight cards for a different intruder heading to create this geometry.

7.2.14 Flight 14: August 11, 2015 – Data Collection 2

Table 37. Config 2 Flight 14 Data.

Flight	Data Collect 2										
SUT	HSI										
Duration	2.7 hours										
Intruder(s)	NASA865, N3GC										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1510										
	1	VE1	Virtual		141		(145)		N/A	N/A	Fly-through
	2	ENC1	Live	15:12:47	141		136		N/A	N/A	15:14:59 L111
	3	ENC2	Live	15:18:55	141		N/A	N/A	144	TA	No maneuver
	4	VE2	Virutal		141		(139)		N/A	N/A	15:25:38 R148
	5	VE3	Virtual		141		(145)		N/A	N/A	Fly-through
	6	VE4	Virtual		141		(135)		N/A	N/A	Fly-through
	7	ENC3	Live	15:38:34	141		136	TA	N/A	N/A	15:41:39 R301
	8	ENC4	Live	15:43:00	141	TA	N/A	N/A	145	TA/RA	15:47:39 L272
	Fireline 2 - COMEX 1606										
	1	VE1	Virtual		141		(145)		N/A	N/A	16:08:28 L111
	2	ENC1	Live	16:08:48	141	TA	136	TA	N/A	N/A	16:11:06 L115
	3	ENC2	Live	16:14:34	141	TA	N/A	N/A	145	TA	16:17:56 R113, R133
	4	VE2	Virtual		141		(140)		N/A	N/A	Left
	5	VE3	Virtual		141		(145)		N/A	N/A	16:25:10 L076
	6	VE4	Virtual		141		-		N/A	N/A	Fly-through
	7	VE5	Virtual		141		(135)		N/A	N/A	16:33:29 R334
	8	ENC3	Live	16:34:50	141		136	TA	N/A	N/A	No maneuver
	9	ENC4	Live	16:37:47	141	TA	N/A	N/A	145	TA/RA	16:42:27 L262

Notes: N3GC was showing 100 ft high on Zeus at one point.

Encounters: Fireline1: 1 – good, 2 – good, 3 – bad, 4 – good, 5 – good, 6 – good, 7 – O/S seemed to head too much south, int1 RA descend 100 ft, good, 8 – good; Fireline2: 1 – good, 2 – good, 3 – good, 4 – good, 5 – good, 6 – good, 7 – good, 8 – int1 not enough run-in, bad, 9 – int2 RA climb

Airspace: Temporarily restricted from using WP 5 (did not affect runs).

Baro/Vis: Fireline1: 29.87, Fireline2: 29.86, clear

Wind: int1 190/25, int2 182/36, Fireline2: ENC1 int1 158/25, ENC2 int2 189/29

Bottom Line: Another seemingly good flight day. Although the researchers mentioned that only 6 of the 8 encounters were usable, this was still real flight data and was still considered beneficial. The heading changed employed a day prior for one of the encounters was also more successful.

7.2.15 Flight 15: August 12, 2015 – Data Collection 3

Table 38. Config 2 Flight 15 Data.

Flight	**Data Collect 3**										
SUT	**HSI**										
Duration	**2.5 hours**										
Intruder(s)	**NASA865, N3GC**										
Data	#	Scenario	Type	Push	O/S Alt.	TA/RA	Int1 Alt.	TA/RA	Int2 Alt.	TA/RA	Result
	Fireline 1 - COMEX 1455										
	1	VE1	Virtual		139		(145)		N/A	N/A	-
	2	ENC1	Live	14:58:18	139		136		N/A	N/A	14:59:57 R179
	3	ENC2	Live	15:03:02	139	TA	N/A	N/A	143	TA/RA	15:07:07 R124
	4	VE2	Virutal		139		(147)		N/A	N/A	Right
	5	VE3	Virtual		139		(132)		N/A	N/A	15:12:18 L078
	6	VE4	Virtual		139		(142)		N/A	N/A	15:21:23 L322
	7	VE5	Virtual		139		(135)		N/A	N/A	-
	8	ENC3	Live	15:24:11	139	TA	134	TA	N/A	N/A	No alert on VSCS
	9	ENC4	Live	15:26:05	139	TA	N/A	N/A	143	TA	No alert on VSCS
	Fireline 2 - COMEX 1555										
	1	VE1	Virtual		139		(145)		N/A	N/A	Fly-through
	2	ENC1	Live	15:58:12	139	TA	136	TA	N/A	N/A	16:00:50 L173
	3	ENC2	Live	16:01:40	139		N/A	N/A	144	TA	16:06:14 R124
	4	VE2	Virtual		139		(143)		N/A	N/A	Fly-through
	5	VE3	Virtual		139		(145)		N/A	N/A	Fly-through
	6	VE4	Virtual		139		(147)		N/A	N/A	16:18:20 L289
	7	VE5	Virtual		139		(135)		N/A	N/A	16:22:27 R308
	8	ENC3	Live	16:22:54	139		136		N/A	N/A	16:26:21 L243
	9	ENC4	Live	16:25:01	139	TA	N/A	N/A	143	TA	16:31:18 L300

Notes: Problem observed with RGCS only sending a WP command once when off autopilot. This day marked the highest barometric pressure seen during Flight Test Series 3, topping out at 30.02 inHg. This was showing NASA608 100 ft low on Zeus. During the phase of no alerting during Fireline1, ADS-B targets were showing frozen for Ghost controller.

Encounters: Fireline1: 1 – good, 2 – good, 3 - int2 RA climb, good, 4 – good, 5 – good, 6 – good, 7 – good, 8 – no alerting, bad, 9 – no alerting, bad; Fireline2: 1 – good, 2 – target freeze on NASA608, int1 RA descend 100 ft, bad, 3 – good, 4 – good, 5 – good, 6 – good, 7 – good, 8 – good, 9 – altitude seemed incorrect, bad

Airspace: No data.

Baro/Vis: Fireline1: 30.02, Fireline2: 30.00, clear but slight haze

Wind: int1 185/20, int2 185/20, Fireline2: int1 180/28, int2 227/22

Bottom Line: This day did not seem successful as others, due to only achieving 5 of the 8 planned live intruder points. Problems with the RGCS/VSCS and also barometric pressure affected system performance. Flight 15 was also the final flight day before additional Configuration 2 flights were cancelled. The researchers recognized that they were not getting the type of data and alerting they required, and also, the system was not acting the way it was thought to (VSGC, etc.). The decision was made to end test and gather lessons learned to make improvements to the Fireline and further flight testing of the Full Mission.

8 Observations and Issues

The many months of planning and coordination was a key factor in the success of the Flight Test Series 3 Configuration 1. Although successful, several lessons learned can be drawn and built into future similar flight testing, especially the lessons learned from the decision to forgo Configuration 1b and additional Configuration 2 flights. Those lessons learned are described below.

8.1 Major Impacts

The following issues significantly impacted the flights or resulted in mission rule violations.

8.1.1 An intruder was within 1 NM and less than 500 ft vertical separation without being visual on Ikhana.

Background Data: During Flight 5 of Configuration 1, while conducting a challenging multi-intruder sequential TCAS encounter, the first intruder did not acquire a visual acquisition (or callout) of Ikhana and reported this after the encounter had been completed. Further, personnel within the SAF did not recognize the missed call or query the intruder aircrew to callout the visual. The flight was completed without further incident. This violated FT3-9 mission rule.

Analysis: After post flight discussion it was determined that hazy conditions, test point complexity and an inside cockpit focus were significant contributors to the mission rule violation. It was also determined that pre-planned routing which maintained a 0.5 NM lateral and 300 ft vertical separation was able to maintain an adequate level of safety, although should not be relied upon as a the sole mitigation.

Mission Relation: Should any manned aircraft fail to acquire visual during FT4 or subsequent tests, the consequence may lead to a closer than planned encounter (either laterally or vertically) and may increase the chances of a midair collision.

Recommendation/Conclusion: The test team developed CRM procedures to help aircrew determine when the visual boundary, 1 NM, was approaching:

- The new procedures became a mandatory briefing item
- The TC was responsible for notifying all participants that the next encounter would require a visual
- The TC would provide range calls over the radio and;
- At approximately 1.5 NM separation a “Check Visual” call was made giving the aircrew ~5 seconds to acquire a visual or abort the encounter.

No further violations occurred after Flight 5 and these additional procedures should be carried forward into future flight test events.

8.1.2 Full mission Configuration 2 flights only completed 3 of 10 planned data collection flights before being cancelled.

Background Data: On 12 August Configuration 2 flight test was terminated with only 3 of 10 data collection flights completed. Although 15 flights in total had been completed, 12 of them were system check and troubleshooting events. Additional details on the effectiveness and suitability of the Configuration 2 system are subject to ongoing analysis and not available at the time of drafting this report.

Analysis: ARC-HSI determined that the flight test data would not adequately suit their objectives and recommended termination of the remaining flights.

Recommendation/Conclusion: Ensuring adequate development time prior to FT4 or subsequent flight tests is paramount. The addition of system check periods with a long enough time to allow system enhancements, changes, or fixes, should be mandatory.

8.1.3 Configuration 1b was not attempted.

Background Data/Analysis: The aircraft planned for this test event, the GRC S-3B, was not able to meet the development time constraints and was not in the desired flight test configuration for FT3.

Recommendation/Conclusion: The other research teams felt that the data acquired with the Ikhana ownship was adequate and their Configuration 1 objectives were met.

8.2 Minor Impacts and Lessons Learned

The following observations resulted in minor impacts to FT3 or are lessons learned to impart upon FT4 and subsequent flight test events.

8.2.1 Configuration 1 and Configuration 2 flight tests are distinct and separate.

The two flight test configurations were considered as a single test event. A limited amount of time was available between the two configurations to complete all necessary planning, integrating, and approval briefings. The following highlights the distinctions between the two configurations:

The workload was significantly different. Configuration 1 flights were workload intensive. As many as 30 encounters were planned during a flight and each encounter was allotted only 10 minutes to complete including setup. Aircrew needed to navigate to new coordinates, understand the upcoming encounter geometry, and setup to make the IP within 5 to 10 seconds of the COMEX time. Each encounter was distinct and required the above mentioned steps to be re-executed each time. Additionally, up to 3 early morning flights were performed per week, adding to crew rest considerations.

Configuration 2 flights were significantly less intensive for the airborne participants. The majority of the test decisions were made by the RGCS, a ground based resource. The

airborne participants simply ensured the aircraft was on the planned parameters while the ground element directed the ownship maneuvers. Furthermore, from one run to the next the encounters did not change. Each intruder executed the same two encounters while the ownship expected the same four encounters changed only by the ground element's response and basic environmental factors such as winds aloft. Configuration 2 flights were afternoon flights flow daily.

That being said, the ownship maneuvers were less predictable in this configuration. The pilot in the RGCS changed from one flight to the next which resulted in a variation of responses to the presented encounters. On one occasion a pilot skipped an encounter altogether having requested and been granted approval by the virtual ATC controller.

Recommendation/Conclusion: Decrease the number of flights per week for early morning sorties (or increase each sortie's duration). Reduce the planned number of test encounters per sortie in order to provide more time to execute each run. Increase the number of test sorties in order to complete the desired test points.

Allocate more time between configurations. The additional time will help ensure success criteria is clearly understood. Clearly communicate the differences between the two configurations more as test phases than simply configurations.

8.2.2 Multiple operating/staging locations decreased efficiency in test execution.

Operating from KEDW, KVNY, KPMD, and KBFL was a challenge to ensure efficient test execution. On multiple occasions, supporting aircraft were held at their staging locations for ATC clearances. Additionally, the offsite aircraft needed a higher bingo fuel in order to return to their staging location. During Configuration 1 events, one or possibly two more encounters per flight could have been completed if all aircraft were co-located.

During Configuration 2 flights the remote staging location of NASA 608 was planned to add the ability for a 3rd fire line run; however, the T-34 was too fuel limited and could not attempt a 3rd run regardless of staging location, and therefore negated the primary benefit of being located off site. Furthermore, the amount of troubleshooting conducted with NASA 608, LVC, and RGCS would have benefitted significantly from being collocated.

Recommendation: Co-locate at AFRC for FT4 and subsequent flight test events.

8.2.3 Low priority within R-2515 resulted in missed flight test opportunities.

Both test configurations were impacted by low prioritization. Configuration 2 operations were more significantly impacted since the routes of flight for both ownship and intruder aircraft utilized more of the airspace than Configuration 1 required and were therefore more in conflict with other airspace users. Additionally, Configuration 2 flights started at 1500L which was an impacted time of day (although this operation time was chosen at the recommendation of USAF airspace management personnel).

Configuration 1 operations within the Mercury Spin and Four Corners work areas were more contained within known UAS working areas and were therefore less impacted by other users. However, on some occasions the FT3 participating aircraft were restricted to certain altitude blocks or lateral bounds which decreased the amount of encounters completed while the team waited for the traffic to clear. Configuration 1 flights started at 0600L and, in general, operations occurring between 0600L to 0800L tend to experience little to no conflicts with other traffic.

Recommendation: For complex routing like the Configuration 2 route, it would increase the mission success rate if the route of flight remains clear of R-2515. Additionally, planning for early morning operations (from 0600L to 0800L) will likely increase the success rate for executing and completing the test as planned.

8.2.4 Planning for nominal and off-nominal conditions was not clear or distinct enough.

Some discussion in brief and de-brief was spent on the differences between Lost Link Altitude and Deconfliction Altitude during the briefing and de-brief. This resulted in some confusion on which altitude the aircraft should fly after the encounter. Here are the expectations and recommendations from the operations group:

Deconfliction Altitude: This is the planned altitude listed on the card that all aircraft should be at after completing the encounter and with TC coordination. This is nominal condition.

Lost Link Altitude: This is the altitude Ikhana will be at in a contingency event where the aircraft loses link. It is designed to keep the aircraft predictable for the other intruder aircraft for a short period of time prior to Ikhana proceeding to lost link holding points. This is an off-nominal condition and the altitude does not need to mirror that of nominal conditions.

8.2.5 Haze, clouds and winds aloft.

Environmental factors impacted FT3 in the following ways:

Haze due to smoke from southern California wildfires reduced the visibility at the aircraft operating altitude enough that it was a contributing factor to the mission rule violation. It is of note that later in the flight visibility at higher altitudes was significantly better.

Clouds, broken layers, caused the cancellation of one Configuration 2 mission rehearsal flight. No other flights were significantly impacted.

Winds aloft were sometimes greater than 30kts. Station keeping was affected for Configuration 1 flights and made arriving at the IP on time challenging. For Configuration 2 flights, the intercept was significantly impacted by high winds and in some cases caused missed encounters.

<u>Recommendation</u>: It is important for aircrew to assess the environmental conditions and make recommendations to the TC. Should a haze or cloud layer decrease the visuals the TC needs to be informed and all participants can make accurate assessments and decisions. In most cases a shift in test altitude would mitigate the haze layer problem. A mitigation for high winds aloft is to develop a tool for the TC/TD to determine push times that accounts for winds aloft.

8.2.6 Understanding success criteria and training operators was critical to mission success.

Over the course of FT3, the test team seemed to struggle to understand what the exact success criteria was for each SUT. Since there were multiple SUTs, the success criteria was not the same from one to another, and this situation was not always clear to the team. For Configuration 1 the following were SUT: JADEM, Stratway+, Radar, TCAS, and CPDS. Each system utilized a different display. Training was conducted by each SUT researcher, and with the researcher present during their respective flights, mission success was maximized. It is noteworthy to point out that the training conducted by the CPDS researcher was the most effective and required the least amount of intervention during the flight itself. In the other system cases, the researcher had to provide instruction in real-time to ensure correct data was being generated.

<u>Recommendation</u>: In order to emulate the desired training, the operations team will provide a template for future test events that identifies what training is required, a format for presenting the material and a schedule of when it will be accomplished. Additionally, a clear understanding of what the researcher expects out of the SUT will be explained to the test team. An example of why proper training in required is in one case during FT3 a system was de-energized by the test team when the team, in fact, wanted to de-select a component of the system.

8.2.7 A separate truth source for positional data, TSPI, from each aircraft was not available for post flight analysis.

Post flight analysis of TSPI information was not a requirement for FT3. However, for higher fidelity evaluation of the Radar, TCAS, and CPDS, a TSPI truth source such as Differential Global Positioning System (DGPS) would have been beneficial. Additionally, the time and geo-location sync from one data source to another was not easily and clearly determined resulting in significant post processing to sync all data sources.

<u>Recommendation</u>: A truth data source should be considered standard equipment for any flight test operation. Incorporate DGPS or suitable TSPI data source on each intruder and ownship aircraft. Ensure all data being collected is time synced.

8.3 Researcher Observations

The following observations were noted and discussed with each research team. The findings below are preliminary and may become outdated once FT3 data has been fully analyzed.

8.3.1 FT3 Configuration 1 successfully completed the major objectives for all SUT.

All stakeholders considered this phase a success and in many cases a first for their SUT.

ARC team members collected good data that will be used to update their simulation model and support future test efforts including PT6 (Part Task 6, V&V of MOPS) and FT4. The data supports operational concept developments for aircraft in the cruise phase of flight.

LaRC team members collected more data in one flight test event than had been collected in past simulated events. The data will be used to update their simulation model and help develop Phase I MOPS for SC-228 and eventually the FAA. Additionally, FT3 was the first time a multi-intruder encounter was conducted for these purposes. For LaRC, many successful scenarios were completed and all objectives were met, and they will continue to find areas for improvement.

CPDS teams consider FT3 a success at collecting several corner case scenarios that challenge both the algorithm and aircrew judgment and decision making based off the CPDS displays. All data analyzed to date appears to correlate with simulation.

The TCAS and Radar stakeholders from GA-ASI both report good data collected for their systems and intend to implement enhancements based off the data collected. The TCAS alerts presented to the crews were within TCAS specifications, but crews recommended some user interface changes that better help them get instant SA once a TCAS message is displayed.

The HSI teams were not able to use the data from Configuration 2 flights for technical reasons still being analyzed.

8.3.2 Both ARC and LaRC requested that all test aircraft keep heading and airspeed more stable during future test events.

Both teams noted in preliminary data analysis that in some cases the aircraft would change airspeed or heading in order to arrive at CPA at the planned time. Although this was intended and permitted, up to 90 seconds from CPA the changes in aircraft state perturbed the researcher's desired data to a minimal extent. In follow-on test events the research teams request aircrew accept the aircraft conditions at the IP as long as they are within timing tolerances. One way to mitigate this is to add real-time monitoring of the ownship and intruder speeds, heading, altitude, predicted CPA, etc. Further planning is required for FT4 to ensure accurate understanding of the success criteria and on-condition parameters will be constrained to help mitigate perturbations.

8.3.3 VSCS displays did not function for ARC and LaRC.

For both teams the planned SUT display did not function correctly. The LaRC team determined that there was not enough granularity in the display for crews to make accurate heading change decisions. They reverted to the Stratway+ native displays on subsequent flight days.

The ARC team used VSCS for all of their planned encounters, but for the encounters that provided directive guidance, the display did not function correctly. Integration issues between AutoResolver and the VSCS display gave inaccurate headings and turn directions to the crews, which resulted in skewed data for those runs that required the aircrew to maneuver per the guidance. The ARC team did not have an alternative display available. For FT4, resources should be assigned to ensure proper integration between Autoresolver and VSCS.

8.3.4 Radar vertical speed indications were not filtered.

The SUT stakeholders that used the radar as a contributing senor were expecting filtered radar data. Their algorithms noted significant shifts in vertical speed that would have been dampened out if filtered. However, the GA-ASI radar team understood that filtering to be inherent to the system that used the data, as opposed to imbedded with the radar itself. Since there are no clear requirements for what a certified radar system should do, GA-ASI intends to implement a filtered data stream for FT4.

8.3.5 An FT4 data collection plan is desired.

SC-228 representatives as well as the FT3 research teams noted that the data collection plan and implementation for FT3 resulted in some inconsistencies that may be reduced with a more detailed collection effort. As noted in Section 8.2.7, multiple data sources with different time syncs needed to be post processed. Specifically, the data from N3GC was a relative time sync as opposed to a GPS time. Planning for a common time sync and installation of a truth source data system for test aircraft should help mitigate this issue.

9 Acronyms

ACAS	Airborne Collision Avoidance System
AFRC	Armstrong Flight Research Center
AFTC	Air Force Test Center
AGL	Above Ground Level
AIM	Aeronautical Information Manual
ARC	Ames Research Center
ATC	Air Traffic Control
AUTO	Automatic
C2	Command and Control
CA	Collision Avoidance
CAT	Collision Avoidance Threshold
CBDR	Constant Bearing Decreasing Range
CCB	Complex Control Board
CFG	Configuration
CNPC	Control and Non-Payload Communication
COA	Certificates of Authorization
COMEX	Commence Exercise
CPA	Closest Point of Approach
CPDS	Conflict Prediction and Display System
CRM	Crew Resource Management
CSSA	Corrective Self-Separation Alert
CST	Combined Systems Test
CTF	Combined Test Force
CVSRF	Crew Vehicle Simulation Research Facility
DAA	Detect And Avoid
DAIDALUS	Detect and AvoID Alerting Logic for Uncrewed Systems
DATR	Dryden Aeronautical Test Range
DCP	Dryden Centerwide Procedure
DD	Decimal Degrees
DEEC	Digital Electronic Engine Control
DET3	Detachment 3
DGPS	Differential Global Positioning System
DICES	Type of Radio Panel used at NASA Armstrong
DME	Distance Measuring Equipment
DRR	Due Regard Radar
DSRL	Distributed System Research Laboratory
EAFB	Edwards Air Force Base
EDM	Engineering Development Module
ENC	Encounter

FAR	Federal Aviation Regulation
FDDRL	Flight Deck Display Research Laboratory
FINEX	Finish Exercise
FL	Flight Level
FM	Full Mission
FSE	Flight Systems Engineer
FT3	Flight Test 3
FT4	Flight Test 4
FTE	Flight Test Engineer
FV	FalconView
GA-ASI	General Atomics Aeronautical Systems, Inc.
GCS	Ground Control Station
GPS	Global Positioning System
GRC	Glenn Research Center
GS	Groundspeed
HSI	Human Systems Integration
HUD	Heads-Up Display
HWY	Highway
IASP	Integrated Aviation Systems Program
ID	Identification
IFR	Instrument Flight Rules
IHITL	Integrated Human In The Loop
ILLA	Ikhana Lost Link Altitude
ILLH	Ikhana Lost Link Heading
IMU	Inertial Measurement Unit
INS	Inertial Navigation System
INT	Intruder
IP	Initial Point
IT&E	Integrated Test and Evaluation
ITAR	International Traffic in Arms Regulations
JADEM	Java Architecture for DAA Extensibility and Modeling
KBFI	ICAO airfield code. King Field in Seattle
KBFL	ICAO airfield code. Meadows Field in Bakersfield
KBFL	ICAO airfield code. Meadows Field in Bakersfield
KEDW	ICAO airfield code. Edwards AFB
KGS	Knots Groundspeed
KIAS	Knots Indicated Airspeed
KPMD	ICAO airfield code. Palmdale airfield
KTAS	Knots True Airspeed
KVCV	ICAO airfield code. Victorville
KVNY	ICAO airfield code. Van Nuys
LaRC	Langley Research Center
LOS	Line Of Sight

LRO	Long Range Optics
LVC	Live Virtual Constructive
MACS	Multi Aircraft Control System
MC	Magnetic Course
MIT	Massachusetts Institute of Technology
MOA	Military Operating Area
MOPS	Minimum Operational Performance Standards
MP	Maneuver Point
MR	Mission Rule
MSL	Mean Sea Level
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NM	Nautical Miles
NMAC	Near Mid-Air Collision
NOTAM	Notice To Airmen
OWG	Operations Working Group
OWN	Ownship
PIC	Pilot In Command
PIRA	Precision Impact Range Area
PSSA	Preventive Self-Separation Alert
PT6	Part Task 6
RA	Resolution Advisory
RAIF	Research Aircraft Integration Facility
REH	Rehearsal
RF	Radio Frequency
RGCS	Research Ground Control Station
RSO	Range Safety Officer
RTB	Return To Base
RTCA	Radio Technical Commission for Aeronautics
S/N	Scenario Number
SA	Situational Awareness
SAA	Sense And Avoid
SAAP	Sense And Avoid Processor
SAF	Stand Alone Facility
SC-228 ToR	Special Committee-228 Terms of Reference
SGT	Stinger Gaffarian Technologies
SME	Subject Matter Expert
SOP	Standard Operating Procedures
SOR	Senior Operations Representative
SPORT	Call Sign for AFTC Radar Control Facility
SS	Self-Separation
SSCA	Self-Separation Corrective Alert (CSSA)
SSI	Self Assurance/Sense and Avoid Interoperability

SSPT	Self-Separation Proximate Traffic
SSWA	Self-Separation Warning Alert
SSWG	System Safety Working Group
STM	Surveillance Tracking Module
SUT	System Under Test
TA	Traffic Advisory
TBD	To Be Determined
TC	Test Conductor
TCAS	Traffic Collision and Avoidance System
TD	Test Director
TECCS	Test and Evaluation Command and Control System
TFR	Temporary Flight Restriction
TRACON	Terminal Radar Approach Control Facility
TSPI	Time-Space-Position Information
UAS	Unmanned Aircraft System
USAF	United States Air Force
UTC	Coordinated Universal Time
V&V	Verification and Validation
VBA	Visual Basic for Applications
VFR	Visual Flight Rules
VID	Visual Identification
VMC	Visual Meteorological Conditions
VSCS	Vigilant Spirit Control Station
VSM	Vehicle Specific Module
WP	Waypoint
ZOA	Oakland Air Route Traffic Control Center

10 References

Document Number	**Document Title**
FT3-FTP-01	FT3 Flight Test Plan
DCP-O-025	NASA Armstrong Aircrew Flight Operations Manual
DCP-O-003	Mission Control Procedure
EAFBI 13-100	Edward AFB Instruction Flying and Airfield Operations
FT3 IT&E DMP-001	Flight Test 3 Data Management Plan
NPR 7900.3	Aircraft Management Operations
OIEP SRD-01	Ownship and Intruder Equipage & Performance SRD
R-2508	R-2508 Complex Users Handbook
Title 14 CFR Part 91	General Operating and Flight Rules

11 Appendix A: Definition of Terms

Blunder	A planned vertical or horizontal maneuver performed by the intruder, ownship or both aircraft that occurs at some point during the flight test encounter. The blunder maneuver is a technique by which the researcher uses to obtain data required to refine algorithm parametric logic.
Configuration 1	This test configuration investigates the advisories generated by the Self Separation and Collision Avoidance Algorithm displays provided by NASA Ames, NASA Langley, or GA-ASI and fed by data from live aircraft during flight. The configuration further investigates TCAS and DRR alerting. Flight Test Configuration 1 is defined into two distinct groups (Configuration 1a and 1b). Configuration 1a involves flight test encounters using a low-speed, unmanned ownship aircraft. Configuration 1b involves flight test encounters using a high-speed manned ownship aircraft.
Configuration 2	The Full Mission test configuration is designed to connect virtual ATC and constructive aircraft processes running at NASA Ames with a live manned intruder aircraft and a UAS surrogate ownship aircraft controlled by the research GCS located at NASA Armstrong. The UAS Surrogate aircraft is flown on a Visual Flight Rules (VFR) flight plan with scenarios containing a mix of two live and several virtual manned Instrument Flight Rules (IFR) and VFR (squawking) aircraft.
Intruder	Intruder aircraft (when properly equipped) provide a target solution for the self-separation algorithm under test. Both low speed, high speed, and multi-ship encounters are planned using intruder aircraft.
Ownship	Ownship aircraft provide the self-separation algorithm host solution for testing airborne geospatial encounters with target (intruder) aircraft. The ownship may be a UAS or UAS surrogate aircraft. Self-separation alerting solutions are presented to the ground control station pilot who determines the best course of action based on display alerting evaluation.
Mitigated	Flight test encounters that are designed for the controlling UAS pilot to either manually respond to a self-separation or RA alert or monitor the aircraft response during an automatic RA alert. Mitigated test encounters are typically planned with vertical, lateral, and timing flight safety margins designed into the flight test encounters to help minimize the potential for an inflight collision.
Unmitigated	Flight test encounters that due to adequate vertical offsets do not require an associated lateral offset for flight safety. Unmitigated encounters are non-maneuvering.

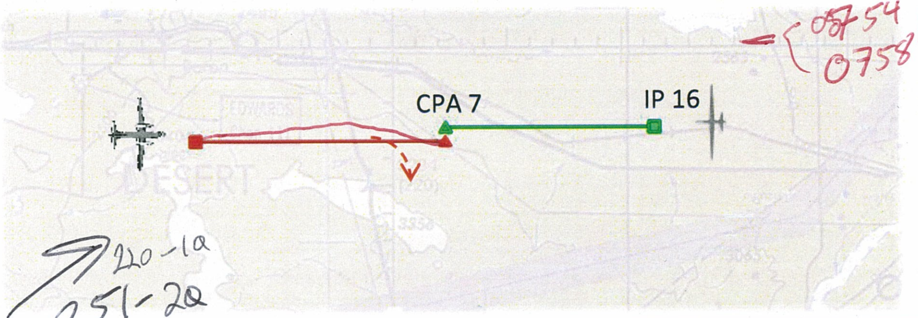
12 Appendix B: Redlined Flight Cards

Flight cards (divided into sections by day) that were flown for Configuration 1 are shown in this Appendix. For Configuration 2, flights cards for each flight day are identical, and can therefore be referenced earlier in this document in Figure 39, Figure 40, and Figure 41.

12.1 Flight 1 Redlined Flight Cards

20150617			Order of Cards Flight 1			Ver 1
Card #	**Scenario**	**Priority**	**Configuraton**	**Ownship Manuever**	**Intruder**	**Notes**
X	Altimeter Calibration				N3GC	
1	18 - L12A	1	AR 1	None - Fly Through	N3GC	IP 16-CPA 7
2	19 - L52A	1		None - Fly Through	N3GC	IP 16-CPA 7
3	20 - L32A	1		None - Fly Through	N3GC	IP 16-CPA 7
4	29 - L12C	1		None - Fly Through	N3GC	IP 16-CPA 7
5	30 - L52C	1		None - Fly Through	N3GC	IP 16-CPA 7
[redacted]	[redacted]	1		None - Fly Through	N3GC	IP 16-CPA 7
7	49 - L12D	1	XML File Change	None - Fly Through	N3GC	IP 1 - CPA 5
8	50 - L52D	1		None - Fly Through	N3GC	IP 1 - CPA 5
[redacted]	[redacted]	1		None - Fly Through	N3GC	IP 1 - CPA 5
10	60 - L12E	1	AR 1	None - Fly Through	N3GC	IP 1 - CPA 5
11	40 - L12M	1		None - Fly Through	N3GC	IP 15 - CPA 7
12	62 - L12N	1		None - Fly Through	N3GC	IP 14 - CPA 7
13	12 - L14A	1		None - Fly Through	N3GC	IP 16 - CPA 7
14	34 - L14C	1		None - Fly Through	N3GC	IP 16 - CPA 7
15	54 - L14D	1		None - Fly Through	N3GC	IP 1 - CPA 5
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 1 - CPA 5
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 15 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 14 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 16 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 16 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 1 - CPA 5
[redacted]	[redacted]	2	AR 2	Follow Autoreslover Guidance	N3GC	IP 1 - CPA 5
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 15 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 14 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 16 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 16 - CPA 7
[redacted]	[redacted]	2		Follow Autoreslover Guidance	N3GC	IP 1 - CPA 5

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:18	Version 9
Card# 1	**L12A**		Ownship



0754
0758 Rolex

220-1a
251-2a

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

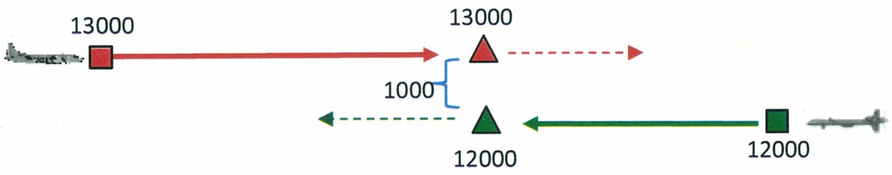
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0754 → 0758

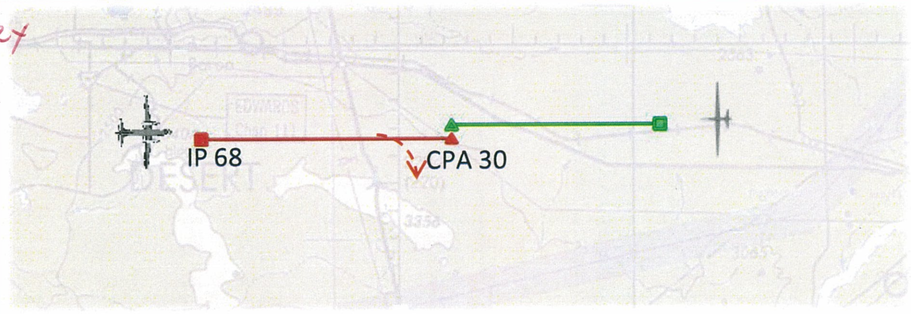
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

L12A

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:18	Version 9
Card#	**L12A**		Intruder 1

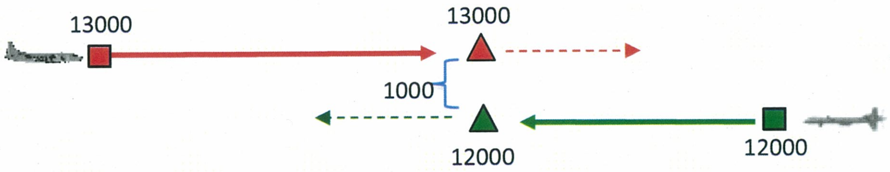


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

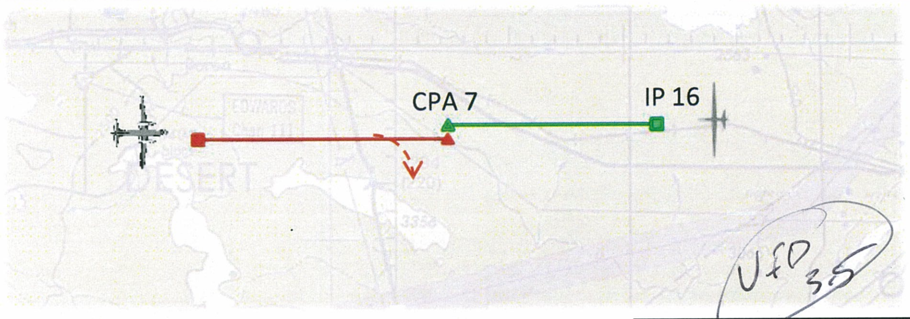
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	13000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:19	Version 9
Card# 2	**L52A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

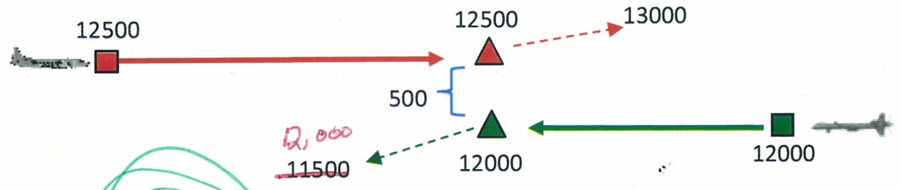
DECONFLICTION ALT:
12000

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

Deselect

ABORT PROCEDURE

~~11500~~ 12,000	MAINTAIN HDG



Tolerance (sec): ± 10

COMEX TIME: 0810

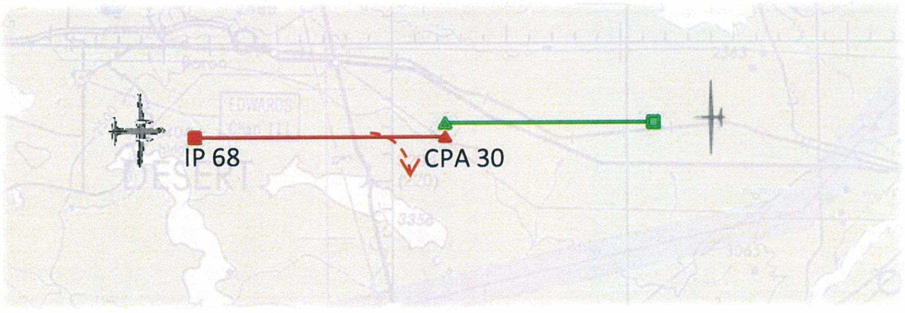
IP TIME ADJUST:

5m

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	0613
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:19	Version 9
Card#	**L52A**		Intruder 1

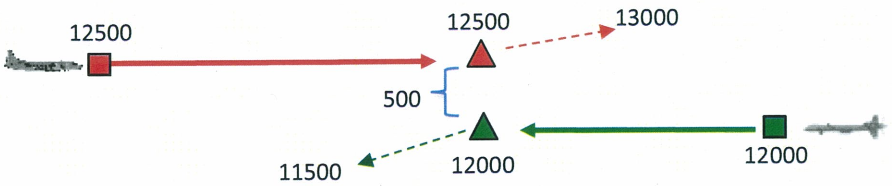


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	120



Tolerance (sec): ± 10

COMEX TIME:

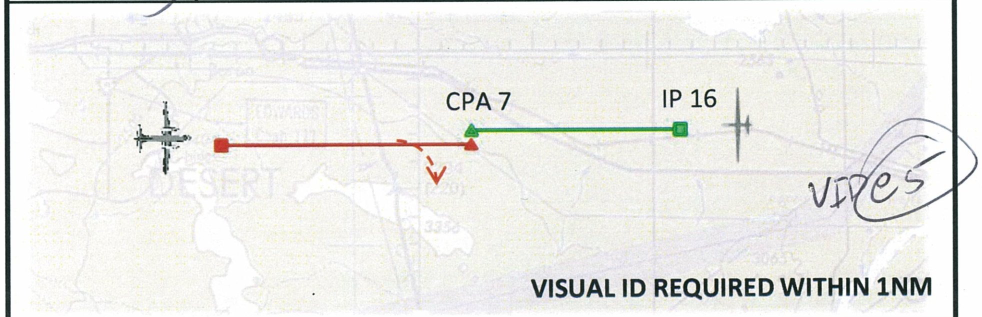
IP TIME ADJUST:

5m

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP68	N34° 56.60'	W117° 38.60'	12500	9.0	180	
	N34° 56' 35.8"	W117° 38' 36.0"	0	078		
CPA30	N34° 56.60'	W117° 27.62'	12500	0.0	180	
	N34° 56' 35.8"	W117° 27' 37.2"	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:20	Version 9
Card# 3	**L32A**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

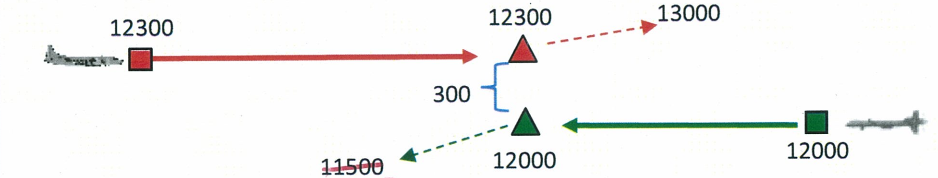
LOST LINK MISSION:

DECONFLICTION ALT: 12000

ABORT PROCEDURE

~~11500~~ 12,000	MAINTAIN HDG

☑ AR 1
☐ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0620

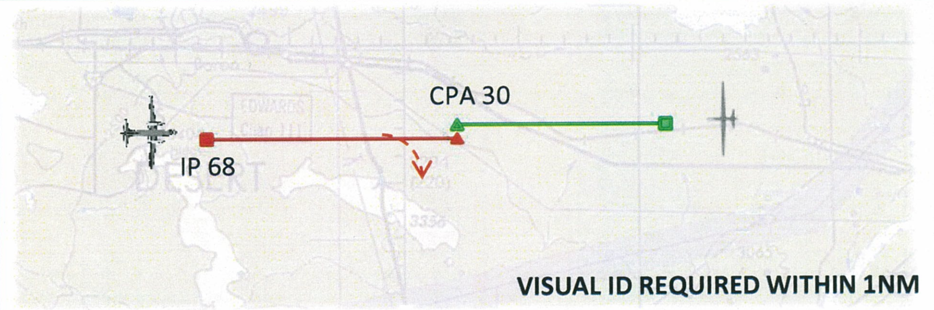
IP TIME ADJUST:

⑨

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	0623+10
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:20	Version 9
Card#	**L32A**		Intruder 1



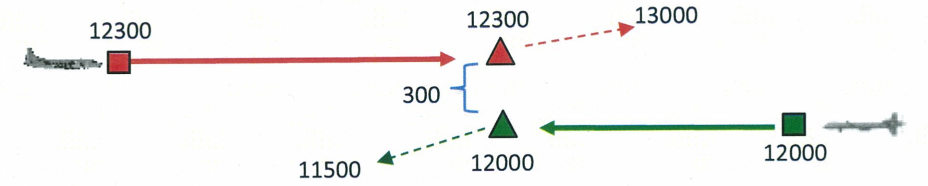
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120



Tolerance (sec): ± 10

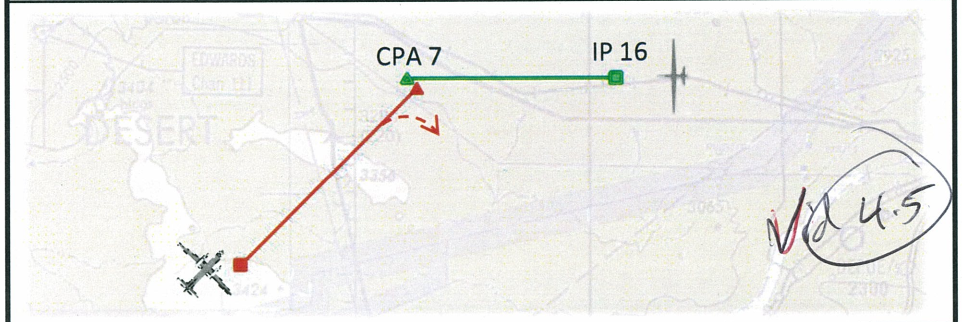
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	N34° 56.60'	W117° 38.60'	12300	9.0	180	
	N34° 56' 35.8"	W117° 38' 36.0"	0	078		
CPA30	N34° 56.60'	W117° 27.62'	12300	0.0	180	
	N34° 56' 35.8"	W117° 27' 37.2"	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:29	Version 9
Card# 4	**L12C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

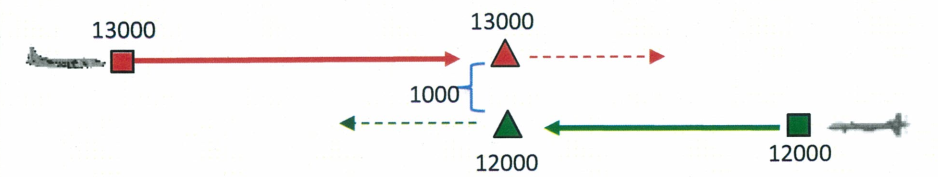
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

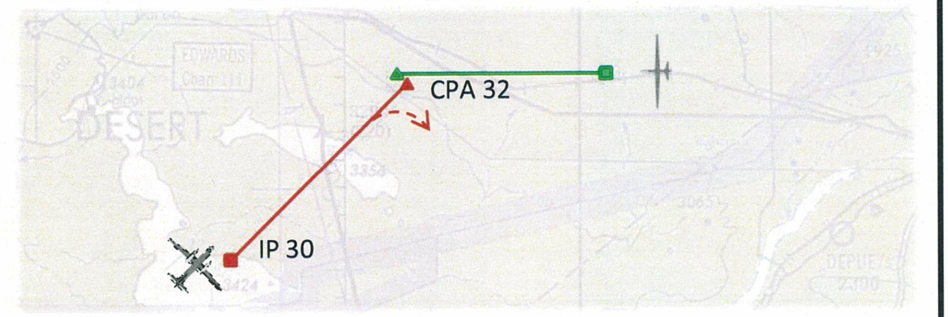


Tolerance (sec): ± 8

COMEX TIME: ~~0830~~ 0834			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4''	**W117° 18' 28.2''**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	0837 +02
	N34° 57' 05.4''	**W117° 27' 37.2''**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:29	Version 9
Card#	**L12C**		Intruder 1

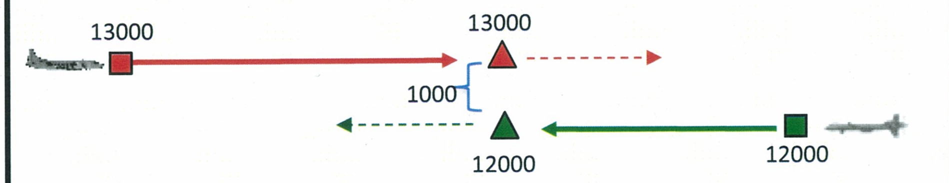


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

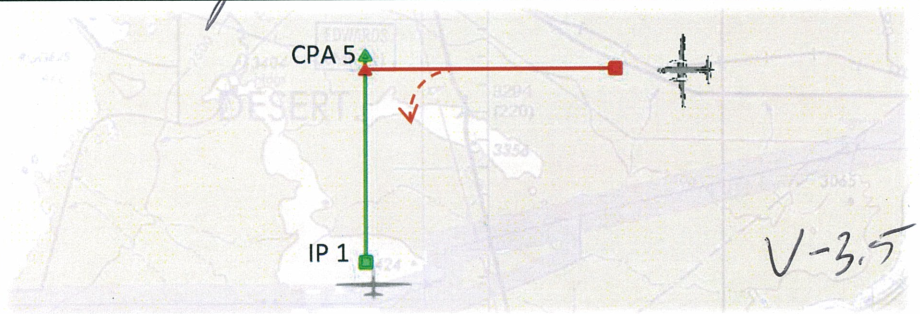


Tolerance (sec): ± 8

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	13000	9.0	**180**	
	N34° 50' 22.6''	**W117° 34' 57.5''**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	13000	0.0	**180**	
	N34° 56' 44.5''	**W117° 27' 11.6''**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:49	Version 9
Card# 7	Geo **L12D**		Ownship



V-3.5

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

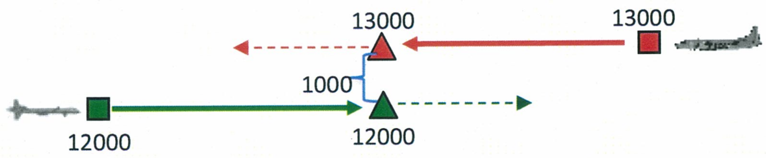
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

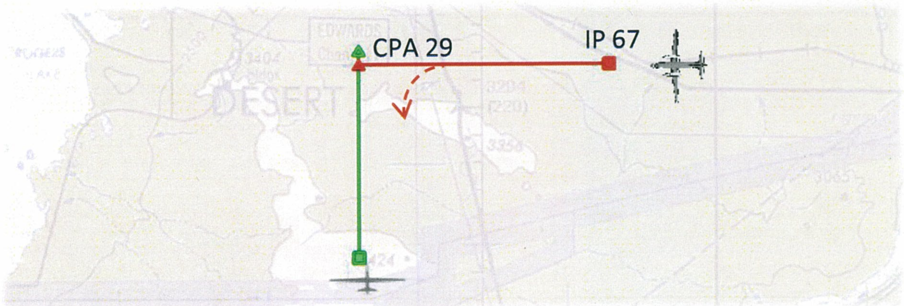


Tolerance (sec): ± 5

COMEX TIME: 0643			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	0646
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:49	Version 9
Card#	**L12D**		Intruder 1

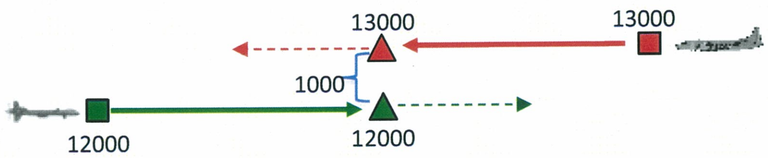


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**

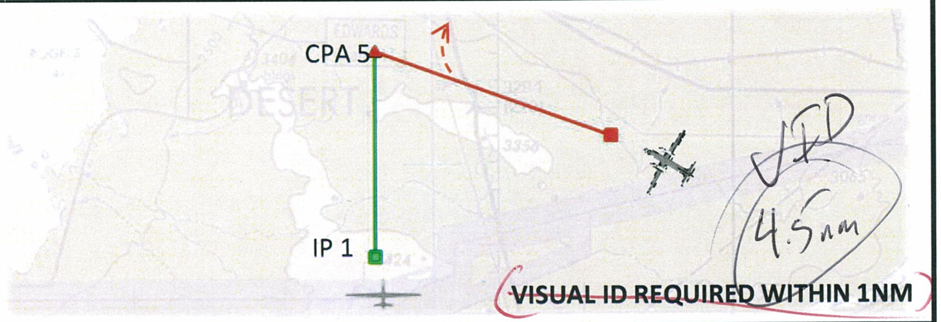


Tolerance (sec): ± 5

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	13000	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	13000	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:60	Version 9
Card# 10	**L12E**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

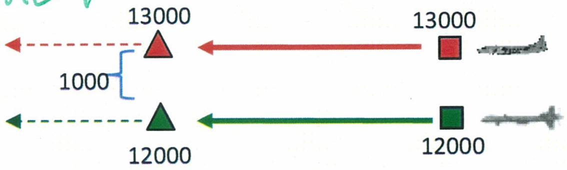
DECONFLICTION ALT: 12000

ABORT PROCEDURE

12000	MAINTAIN HDG

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER

– FMC XML ✓



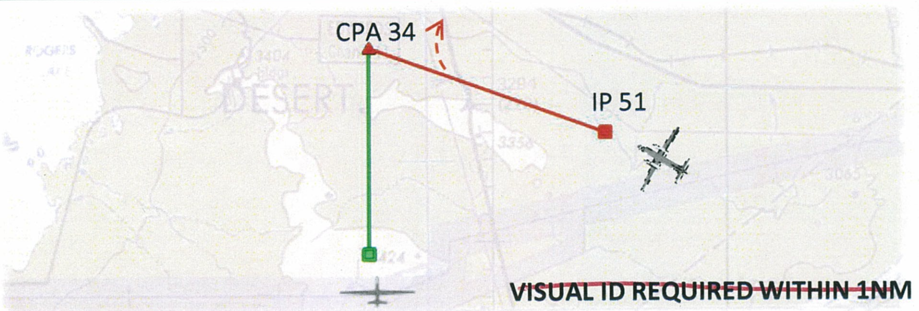
Tolerance (sec): ± 10

COMEX TIME: 0855			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	N34° 49.55'	W117° 35.30'	12000	7.5	150	
	N34° 49' 33.0"	W117° 35' 18.0"	0	348		
CPA5	N34° 57.05'	W117° 35.30'	12000	0.0	150	085840
	N34° 57' 03.0"	W117° 35' 18.0"	0	348		

NOTE: Ikhana fly through/non-maneuvering

10/ A/R NON-ALT Real

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:60	Version 9
Card#	**L12E**		Intruder 1



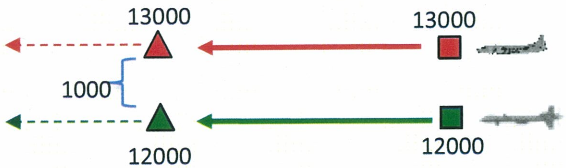
~~**VISUAL ID REQUIRED WITHIN 1NM**~~

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	030



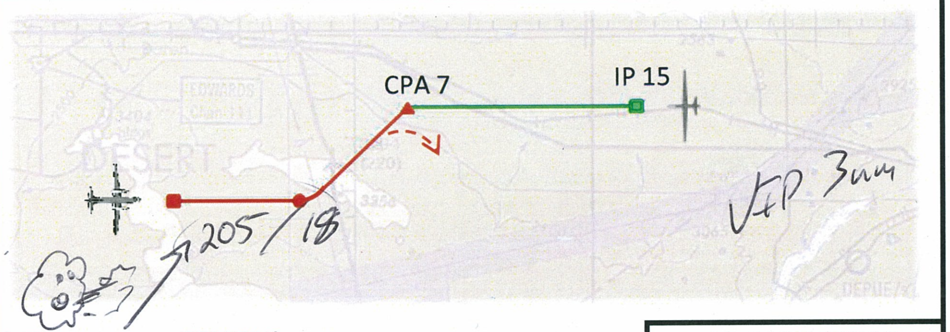
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP51	N34° 53.97'	W117° 24.98'	13000	9.0	180	
	N34° 53' 58.3"	W117° 24' 58.9"	0	278		
CPA34	N34° 57.05'	W117° 35.30'	13000	0.0	180	
	N34° 57' 03.0"	W117° 35' 18.0"	0	278		

NOTE: Cooperative/non-maneuvering

G91

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:40	Version 9
Card# 4	**L12M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

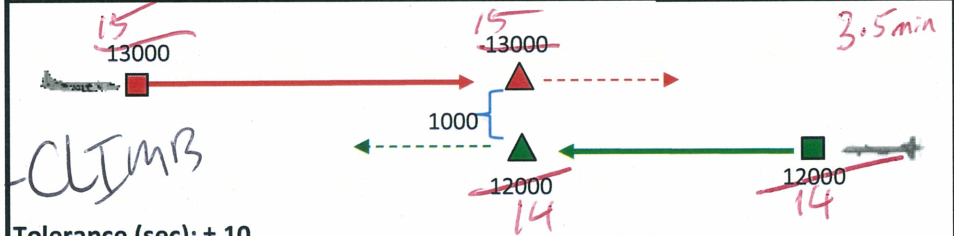
LOST LINK MISSION:

DECONFLICTION ALT:
~~12000~~ 14

ABORT PROCEDURE

~~12000~~ 14	MAINTAIN HDG

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

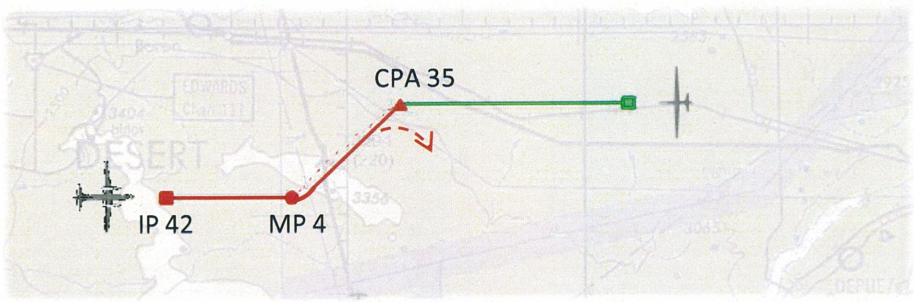
COMEX TIME: 0466

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP15	**N34° 57.09'**	**W117° 17.71'**	12000	8.1	**150**	
	N34° 57' 05.4"	**W117° 17' 42.4"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:40	Version 9
Card#	**L12M**		Intruder 1



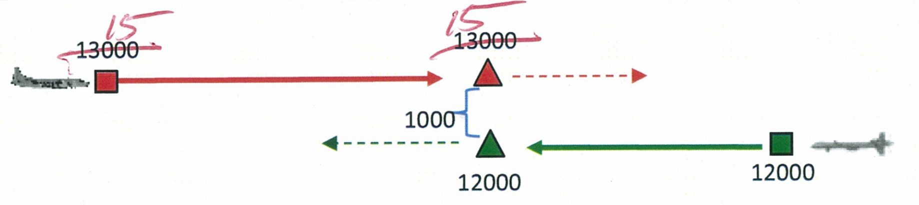
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15 ~~13000~~

ABORT PROCEDURE

15 ~~13000~~	120

NOTE: Cooperative/non-maneuvering



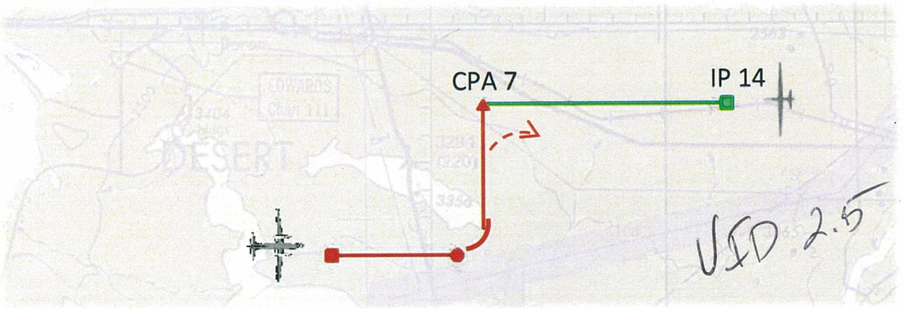
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP42	**N34° 53.63'**	**W117° 37.81'**	13000	4.5	**180**	
	N34° 53' 37.7"	**W117° 37' 48.7"**	0	078		
MP4	**N34° 53.63'**	**W117° 32.33'**	13000	5.2	**180**	
	N34° 53' 37.7"	**W117° 32' 19.5"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:62	Version 9
Card# 12	**L12N**		Ownship



VID 2.5

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

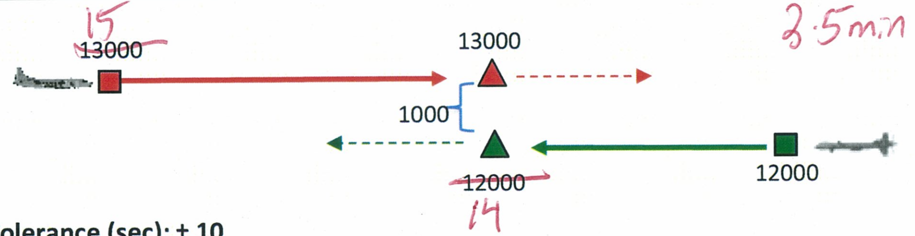
LOST LINK MISSION:

DECONFLICTION ALT: ~~12000~~ 14

ABORT PROCEDURE

~~12000~~ 14	MAINTAIN HDG

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



3.5min

Tolerance (sec): ± 10

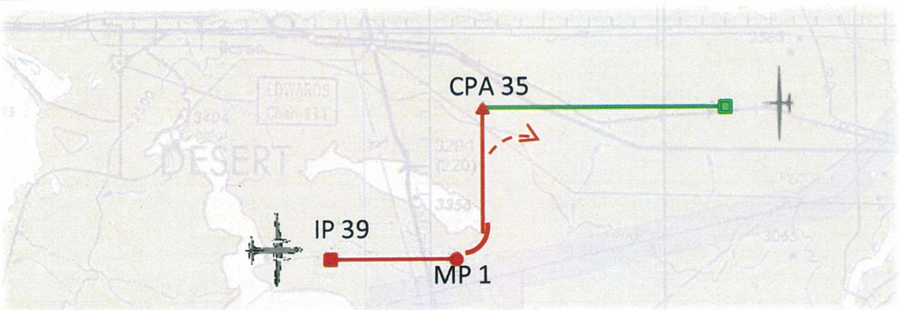
COMEX TIME: 0923

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP14	N34° 57.09'	W117° 16.95'	12000	8.8	150	
	N34° 57' 05.4"	W117° 16' 56.7"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC	S/N:62	Version 9
Card#	**L12N**		Intruder 1



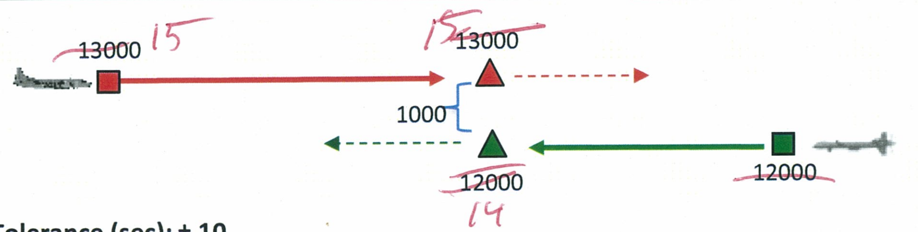
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 15 ~~13000~~

ABORT PROCEDURE

15 ~~13000~~	120

NOTE: Cooperative/non-maneuvering



Tolerance (sec): ± 10

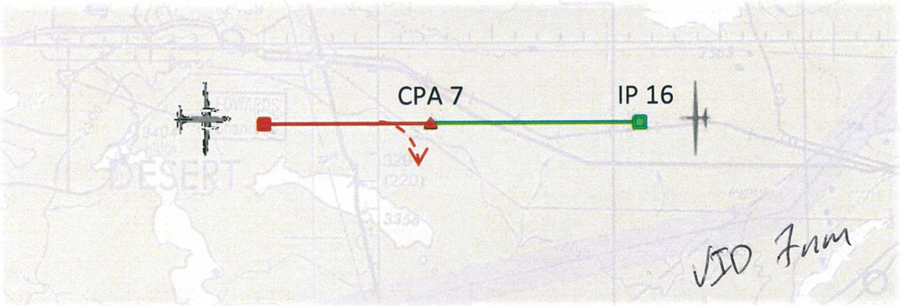
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP39	N34° 51.64'	W117° 34.27'	13000	4.5	180	
	N34° 51' 38.1"	W117° 34' 16.1"	0	078		
MP1	N34° 51.64'	W117° 28.78'	13000	5.5	180	
	N34° 51' 38.1"	W117° 28' 47.0"	0	348		
CPA35	N34° 57.09'	W117° 27.62'	13000	0.0	180	
	N34° 57' 05.4"	W117° 27' 37.2"	0	348		

0932

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:12	Version 9
Card# 13	**L14A**		Ownship



VID 7nm

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

V/S told to climb

Tolerance (sec): ± 10

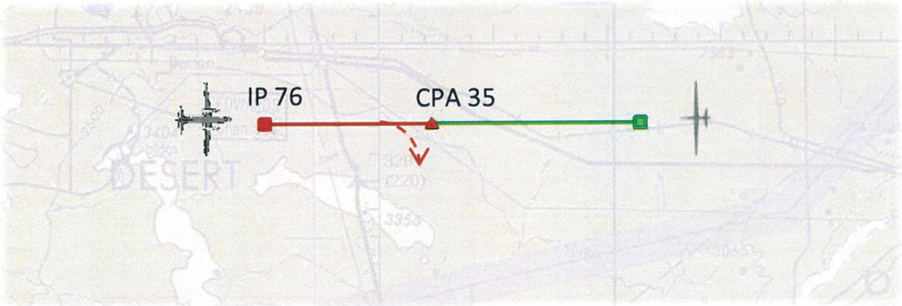
COMEX TIME: 0932 — 0935 0936

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	0941+00
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:12	Version 9
Card#	**L14A**		Intruder 1

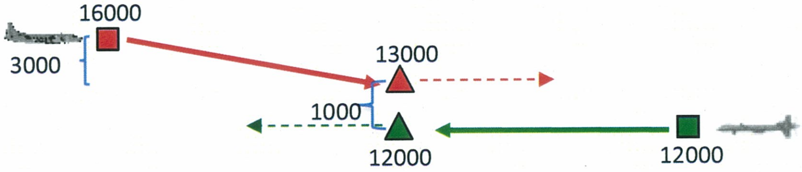


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

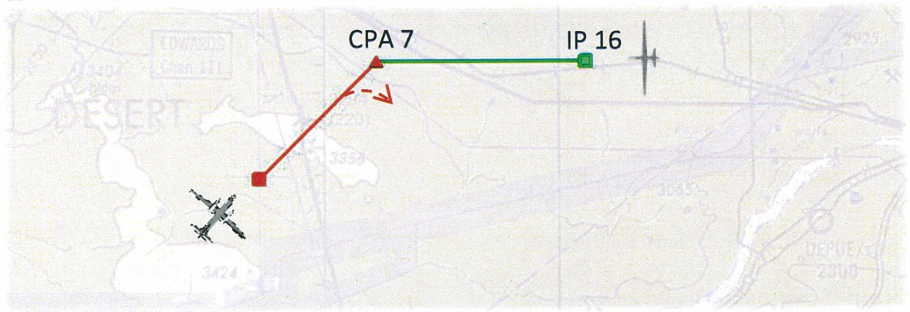
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP76	N34° 57.09'	W117° 38.19'	16000	8.5	**140**	
	N34° 57' 05.4"	W117° 38' 11.2"	-1000	078		
CPA35	N34° 57.09'	W117° 27.62'	13000	0.0	**140**	
	N34° 57' 05.4"	W117° 27' 37.2"	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:34	Version 9
Card# 14	**L14C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

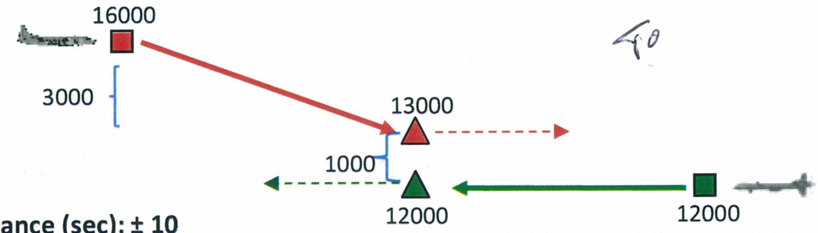
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



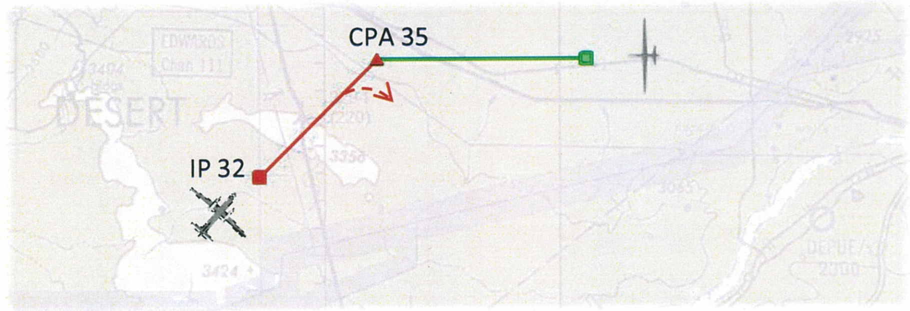
40

Tolerance (sec): ± 10

COMEX TIME: ~~0946~~ 0950			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	0953
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:34	Version 9
Card#	**L14C**		Intruder 1

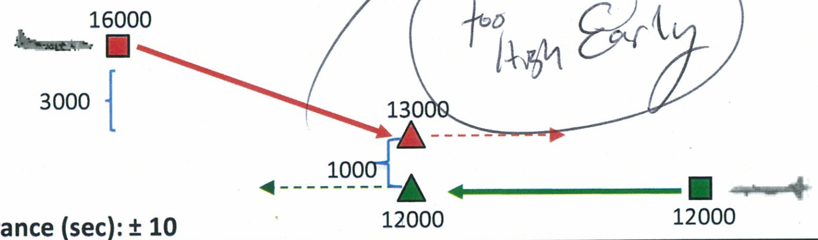


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



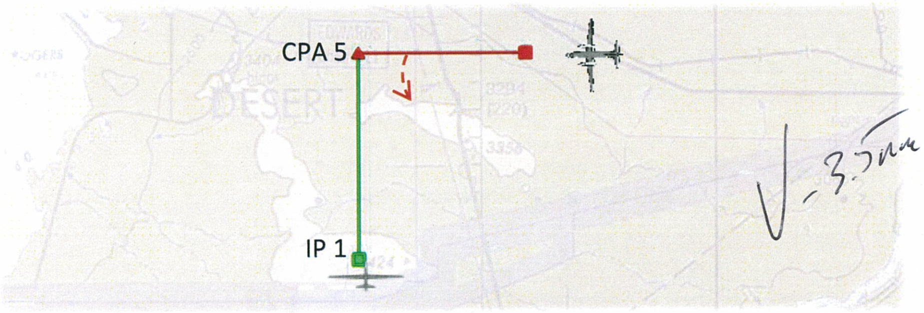
too High Early

Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	16000	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	-1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	T91
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:54	Version 9
Card# 15	**L14D**		Ownship



√ -3.5nm

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

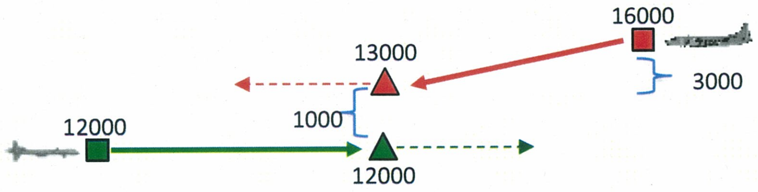
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

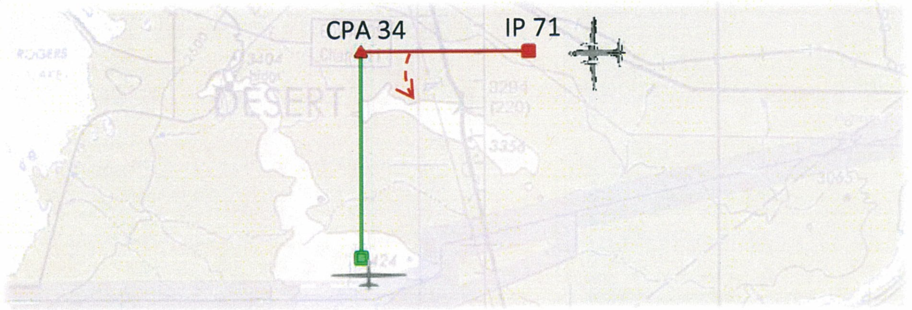


Tolerance (sec): ± 10

COMEX TIME: 1000			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	10+ 0305
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:54	Version 9
Card#	**L14D**		Intruder 1

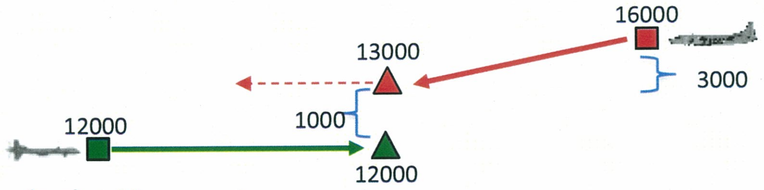


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



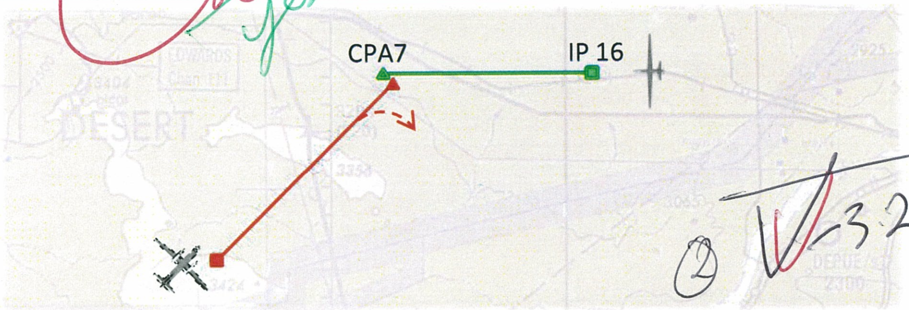
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP71	**N34° 57.05'**	**W117° 24.80'**	16000	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	-1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:30	Version 9
Card# 5	**L52C**		Ownship

Wo yes



② V-32

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

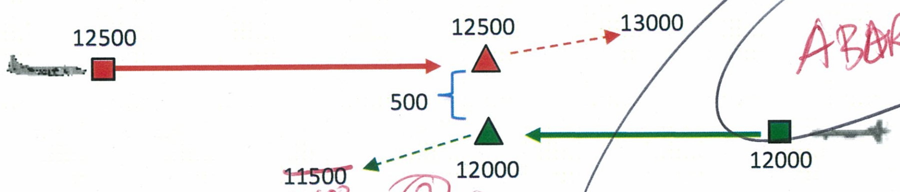
LOST LINK MISSION:

DECONFLICTION ALT: 12000

ABORT PROCEDURE

~~11500~~ 12,000	MAINTAIN HDG

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



~~11500~~ 12,000

ABORT 287

Tolerance (sec): ± 8

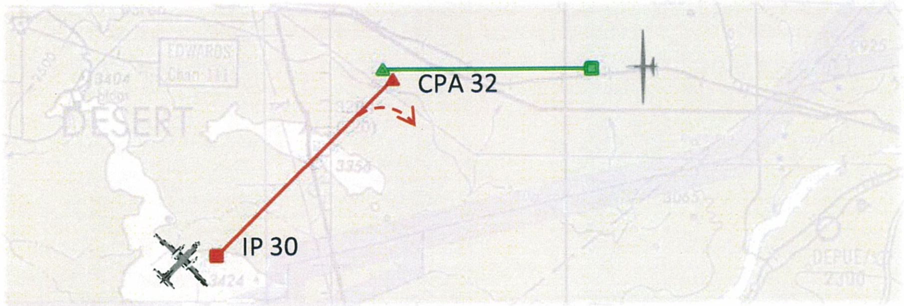
② 1023

COMEX TIME: 1013			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	ABORT
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	⑫ 26+10
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

5

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:30	Version 9
Card#	**L52C**		Intruder 1

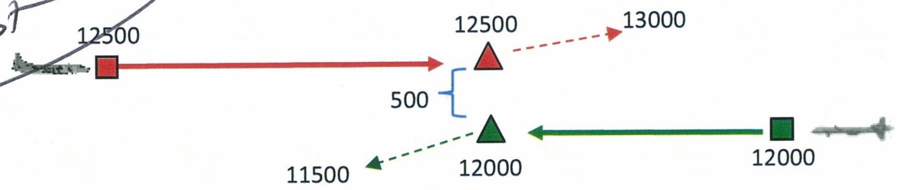


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120

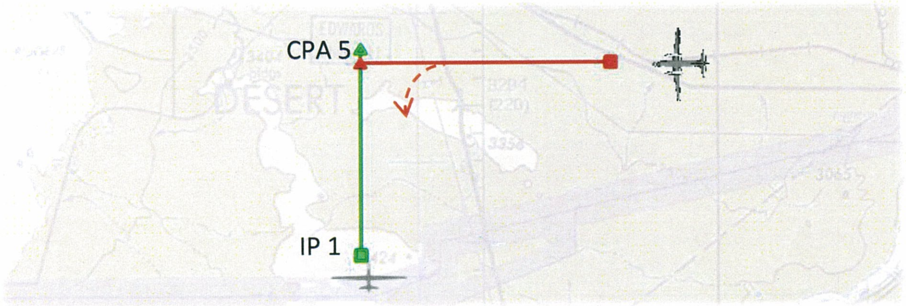


Tolerance (sec): ± 8

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	N34° 50.38'	W117° 34.96'	12500	9.0	180	
	N34° 50' 22.6"	W117° 34' 57.5"	0	033		
CPA32	N34° 56.74'	W117° 27.19'	12500	0.0	180	
	N34° 56' 44.5"	W117° 27' 11.6"	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:50	Version 9
Card# 4	**L52D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

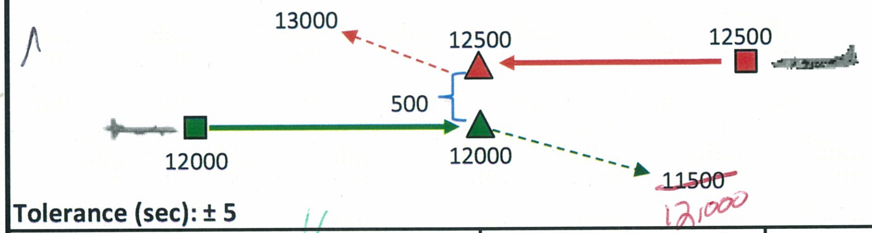
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

~~11500~~ 12000	MAINTAIN HDG

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

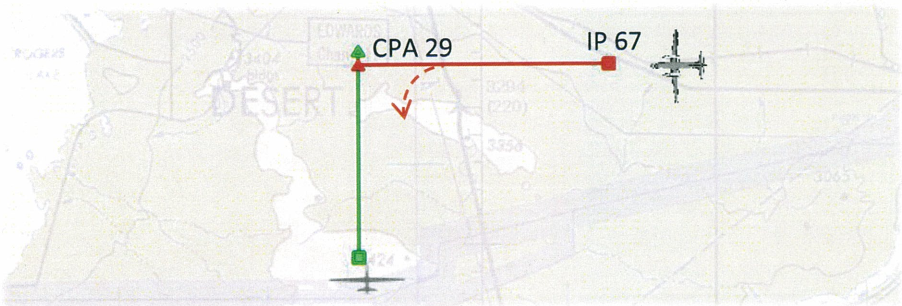


Tolerance (sec): ± 5

COMEX TIME: 1032 // 1043			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	N34° 49.55'	W117° 35.30'	12000	7.5	150	
	N34° 49' 33.0"	W117° 35' 18.0"	0	348		
CPA5	N34° 57.05'	W117° 35.30'	12000	0.0	150	
	N34° 57' 03.0"	W117° 35' 18.0"	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:50	Version 9
Card#	**L52D**		Intruder 1

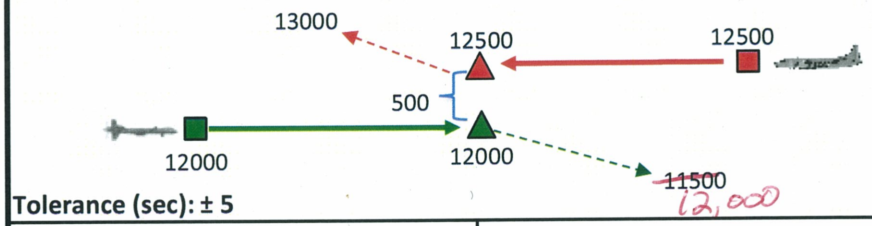


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	150



Tolerance (sec): ± 5

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	N34° 56.56'	W117° 24.32'	12500	9.0	180	
	N34° 56' 33.4"	W117° 24' 19.2"	0	258		
CPA29	N34° 56.56'	W117° 35.30'	12500	0.0	180	
	N34° 56' 33.4"	W117° 35' 18.0"	0	258		

NOTE: Cooperative/non-maneuvering

12.2 Flight 2 Redlined Flight Cards

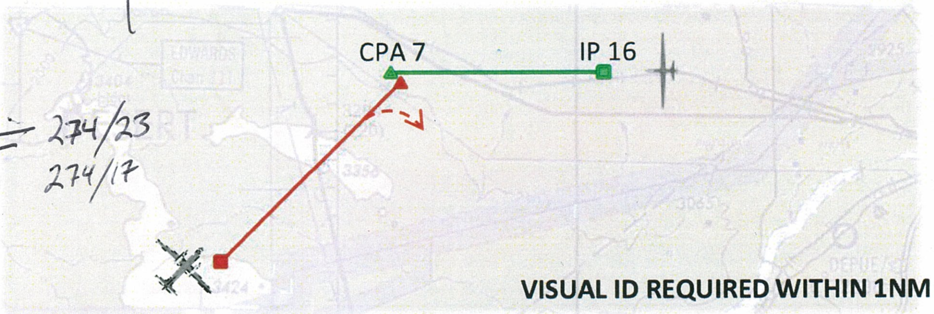
20150618

Order of Cards
Flight 2

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC	
1	31 - L32C	1		None - Fly Through	N3GC	
2	51 - L32D	1	XML Change	None - Fly Through	N3GC	
3	10 - L13A	1		None - Fly Through	N3GC	Artifical Offset
4	32 - L13C	1		None - Fly Through	N3GC	
5	52 - L13D	1		None - Fly Through	N3GC	
6	16 - L16A	1		None - Fly Through	N3GC	
7	38 - L16C	1		None - Fly Through	N3GC	
8	58 - L16D	1	XML Change	None - Fly Through	N3GC	
9	14 - L15A	1		None - Fly Through	N3GC	
10	36 - L15C	1		None - Fly Through	N3GC	
11	56 - L15D	1	AR 2 /XML	None - Fly Through	N3GC	
12	10 - L13A	4		None - Fly Through	N3GC	
13	32 - L13C	4		None - Fly Through	N3GC	
14	52 - L13D	4		None - Fly Through	N3GC	
15	16 - L16A	4		None - Fly Through	N3GC	
16	38 - L16C	4		None - Fly Through	N3GC	
17	58 - L16D	4	XML Change	None - Fly Through	N3GC	
18	12 - L14A	4		None - Fly Through	N3GC	
19	34 - L14C	4		None - Fly Through	N3GC	
20	54 - L14D	4		None - Fly Through	N3GC	
21	60 - L12E	4		None - Fly Through	N3GC	
22	40 - L12M	4		None - Fly Through	N3GC	
		4		None - Fly Through	N3GC	
		4		None - Fly Through	N3GC	
		4		None - Fly Through	N3GC	
		4		None - Fly Through	N3GC	

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:31	Version 9
Card#	**L32C**		Ownship



274/23
274/17

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

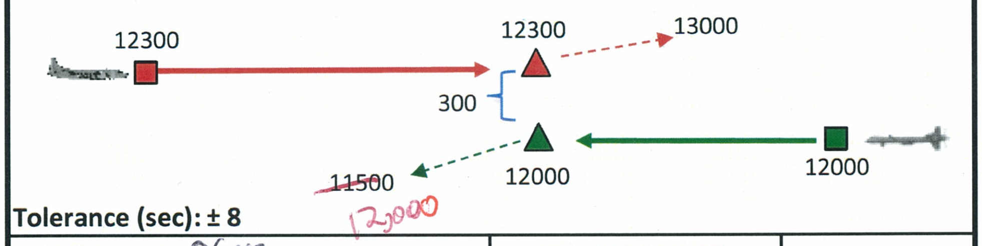
LOST LINK MISSION:

DECONFLICTION ALT: 12000

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		~~☑ RADAR~~	~~☑ TCAS~~	~~☑ TRACKER~~

ABORT PROCEDURE

~~11500~~ 12,000	MAINTAIN HDG



Tolerance (sec): ± 8

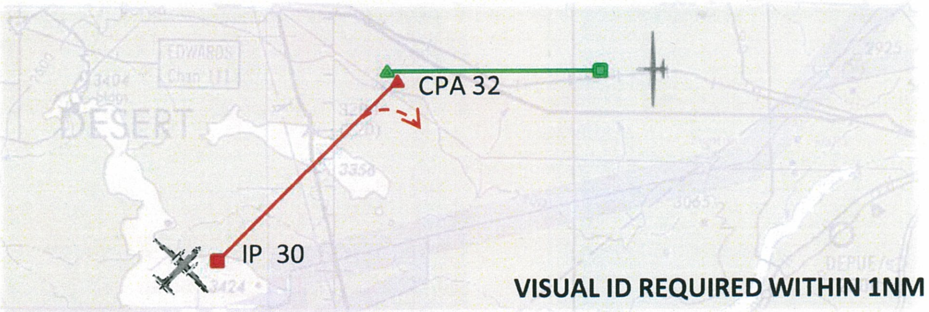
COMEX TIME: 0643

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	0646
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:31	Version 9
Card#	**L32C**		Intruder 1

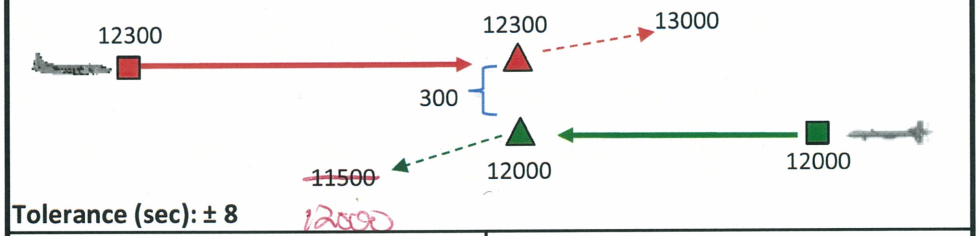


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120



Tolerance (sec): ± 8

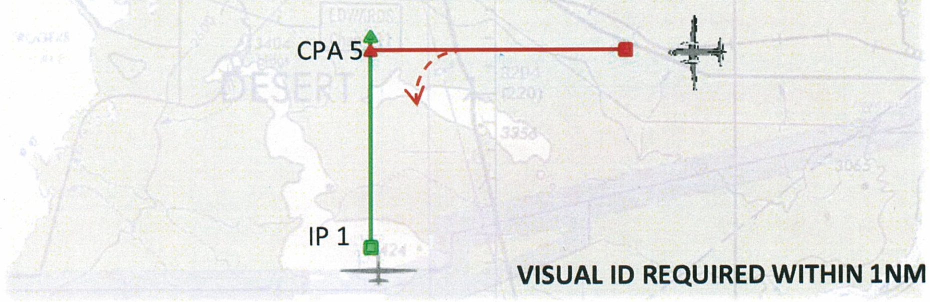
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	12300	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12300	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:51	Version 9
Card#	**L32D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

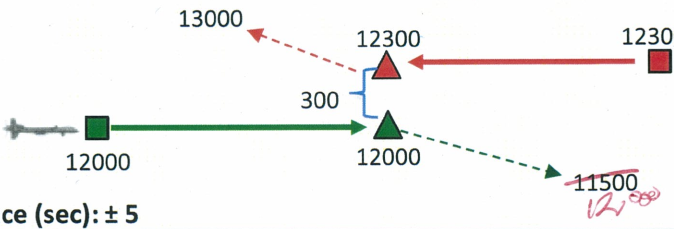
LOST LINK MISSION:

DECONFLICTION ALT: 12000

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☒ RADAR	☒ TCAS
			☒ TRACKER

ABORT PROCEDURE

~~11500~~ 12000	MAINTAIN HDG



Tolerance (sec): ± 5

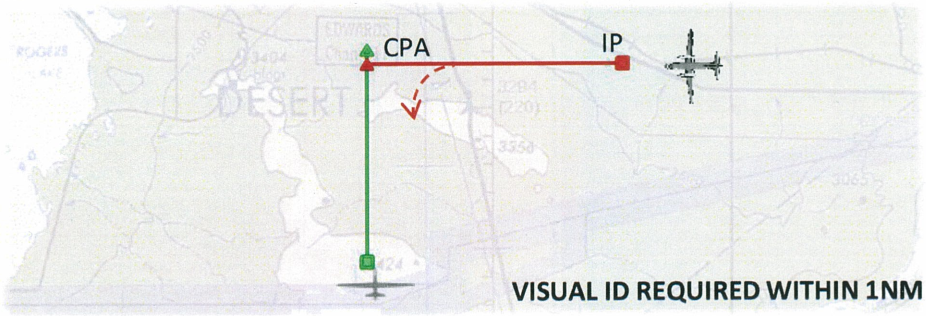
COMEX TIME: 0653

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:51	Version 9
Card#	**L32D**		Intruder 1

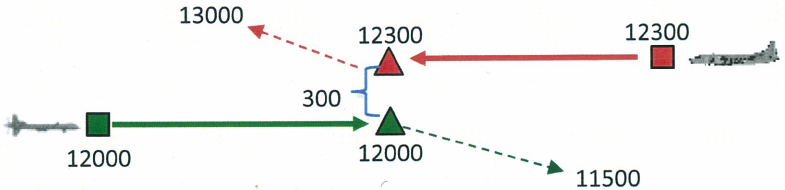


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	↶ 150



Tolerance (sec): ± 5

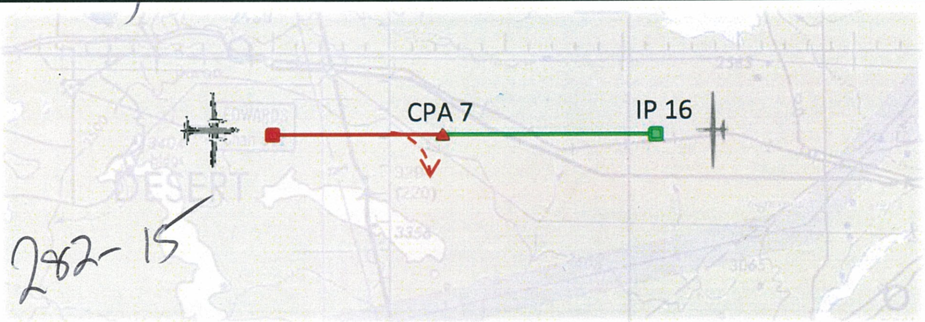
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12300	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12300	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:10	Version 9
Card# 9	**L13A**		Ownship



282-15

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

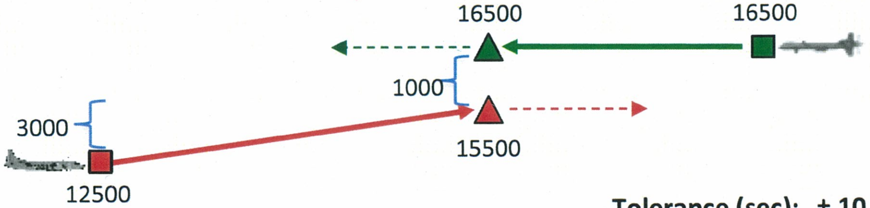
LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☒ ADS-B	☑ RADAR	☒ TCAS	☑ TRACKER

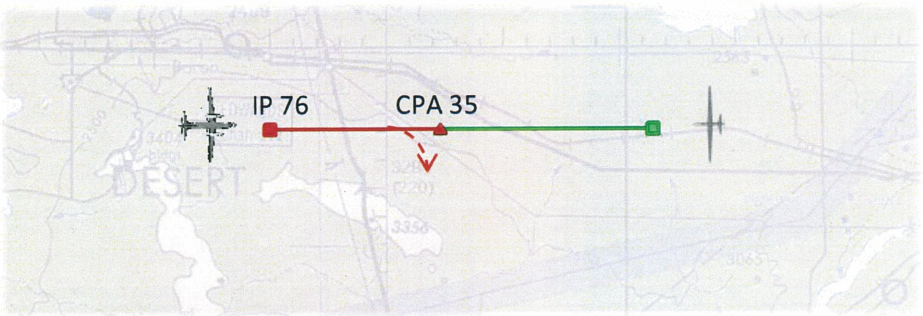


Tolerance (sec): ± 10

COMEX TIME: 0704			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:10	Version 9
Card#	**L13A**		Intruder 1



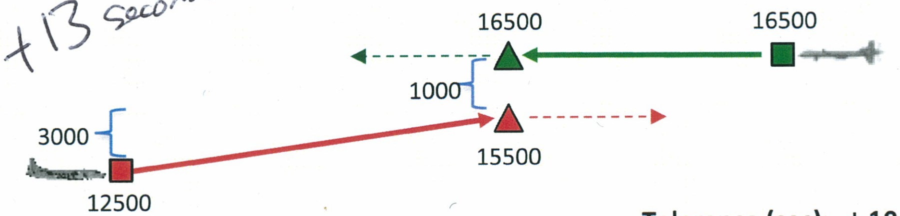
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**

+13 seconds

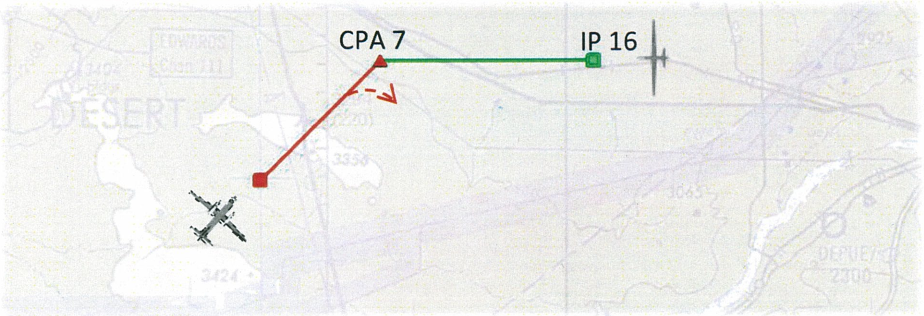


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP76	**N34° 57.09'**	**W117° 38.19'**	12500	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:32	Version 9
Card# 4	**L13C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

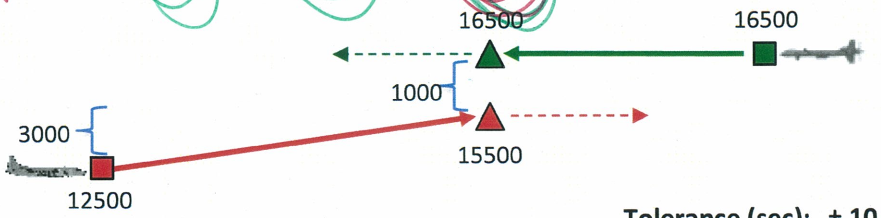
LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1
☐ AR 2
☐ OFF
☑ ADS-B
☐ Stratway+
☑ Advisory
☑ RADAR
☐ CPDS
☐ AUTO
☑ TCAS
☑ TRACKER

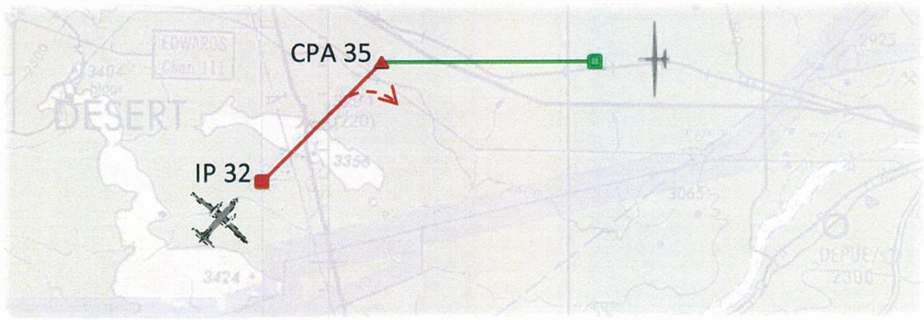


Tolerance (sec): ± 10

COMEX TIME: 0715			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:32	Version 9
Card#	**L13C**		Intruder 1

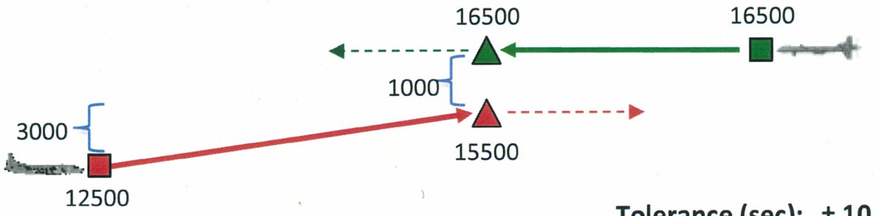


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**

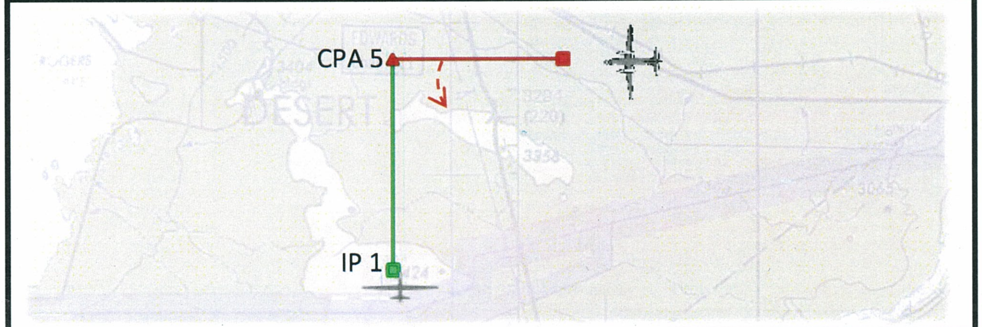


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	12500	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:52	Version 9
Card# 5	L13D		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

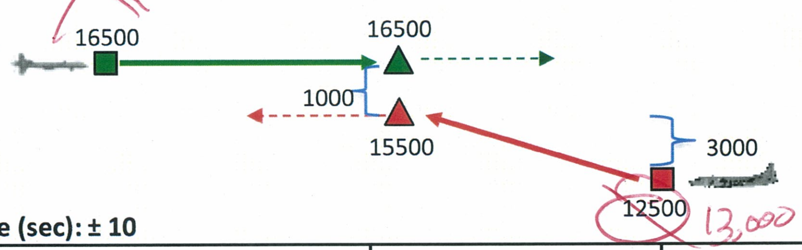
LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
~~☑ ADS-B~~		~~☑ RADAR~~	☑ TCAS
			☑ TRACKER

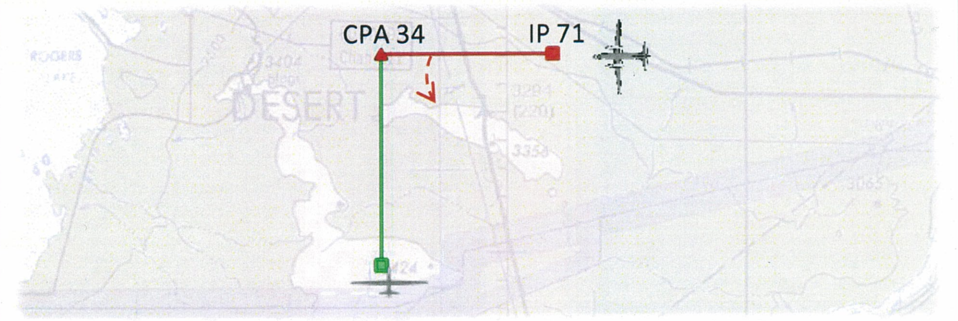


Tolerance (sec): ± 10

COMEX TIME: 0725			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	16500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	16500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:52	Version 9
Card#	L13D		Intruder 1

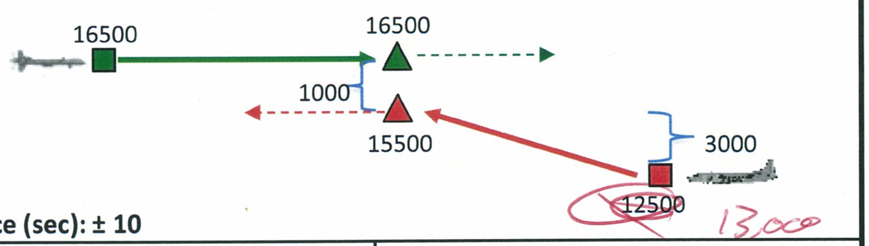


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**150**



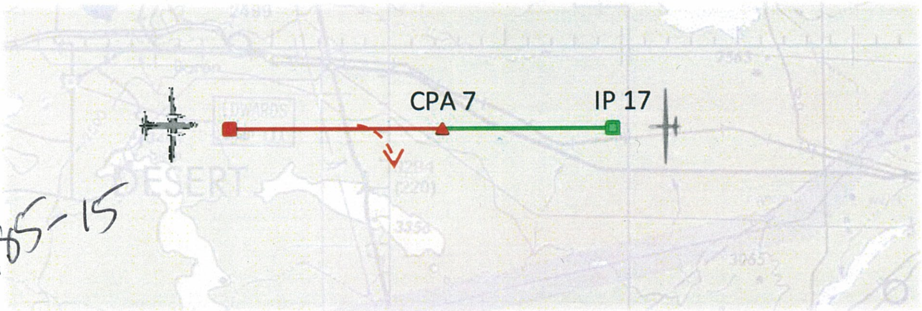
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	12500	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	~~1000~~ 500	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	15500	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:16	Version 9

Card# 6	**L16A**	Ownship



285-15

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

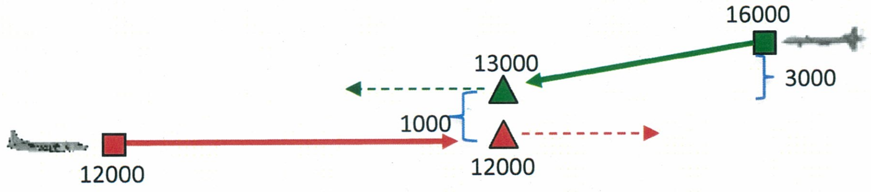
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

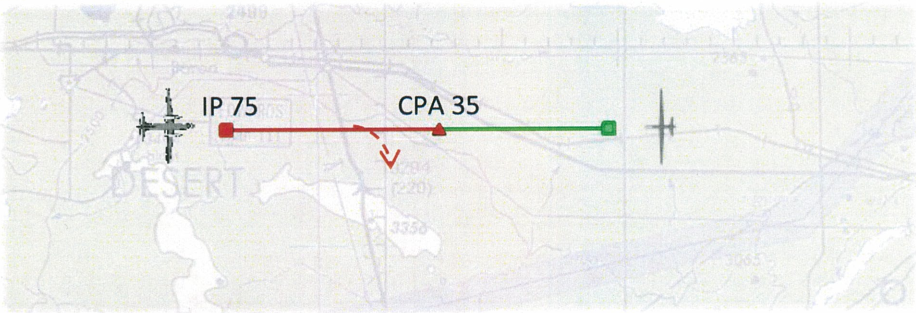
COMEX TIME: 0735 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	16000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:16	Version 9

Card#	**L16A**	Intruder 1

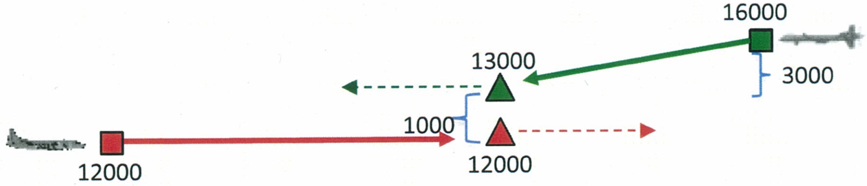


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



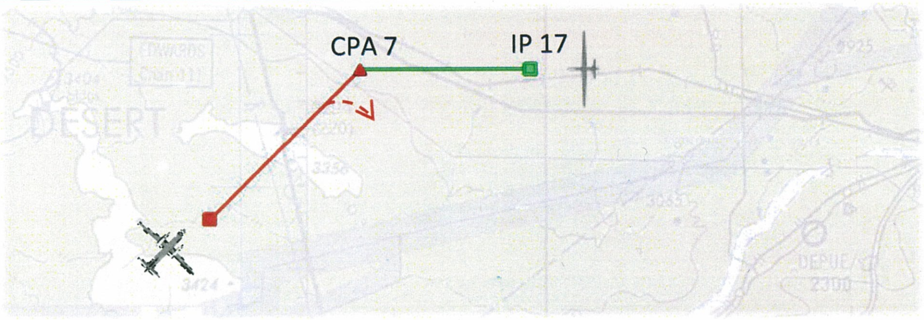
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP75	**N34° 57.09'**	**W117° 36.77'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:38	Version 9
Card# 7	**L16C**	Ownship	



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

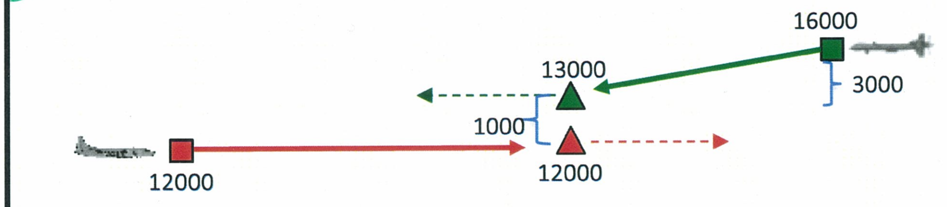
LOST LINK MISSION:

DECONFLICTION ALT:
13000

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

13000	**MAINTAIN HDG**



Tolerance (sec): ± 10

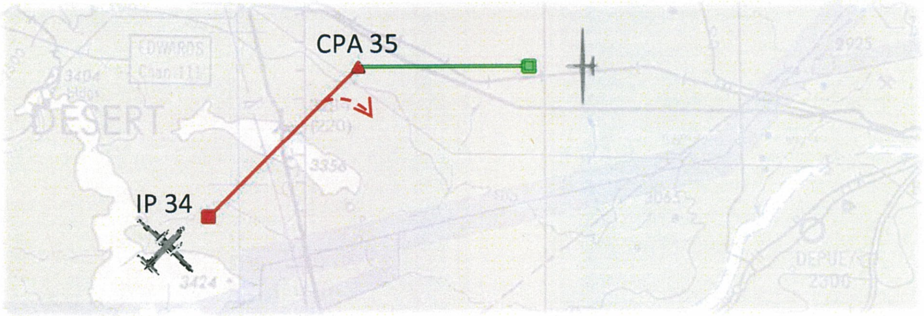
COMEX TIME: 0745

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	16000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:38	Version 9
Card#	**L16C**	Intruder 1	

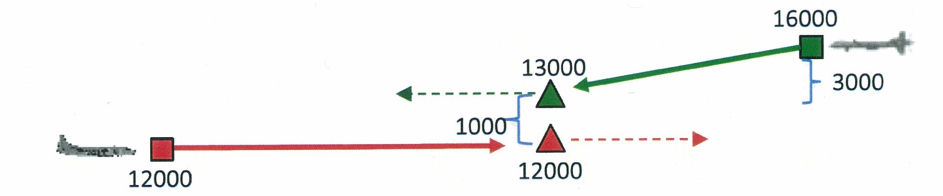


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



Tolerance (sec): ± 10

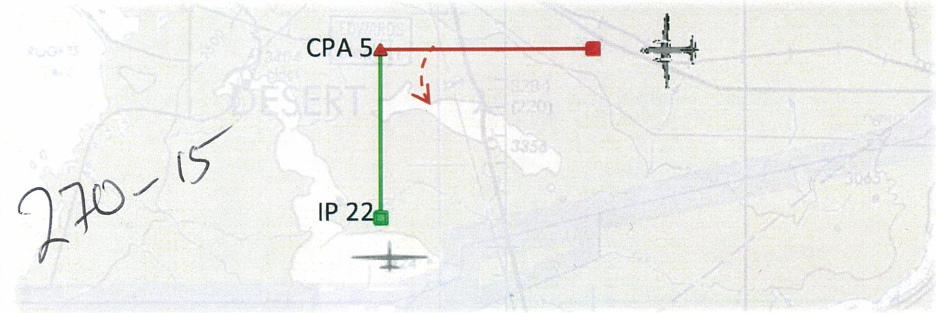
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	**N34° 51.79'**	**W117° 34.09'**	12000	7.5	**150**	
	N34° 51' 47.2"	**W117° 34' 05.4"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:58	Version 9
Card# 4	**L16D**		Ownship



270-15

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

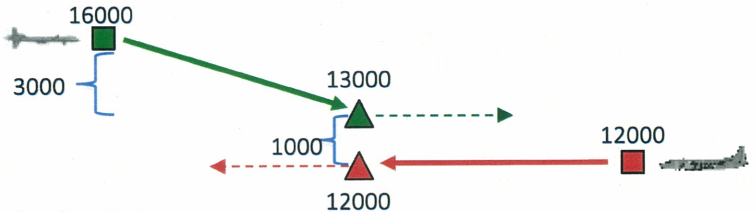
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

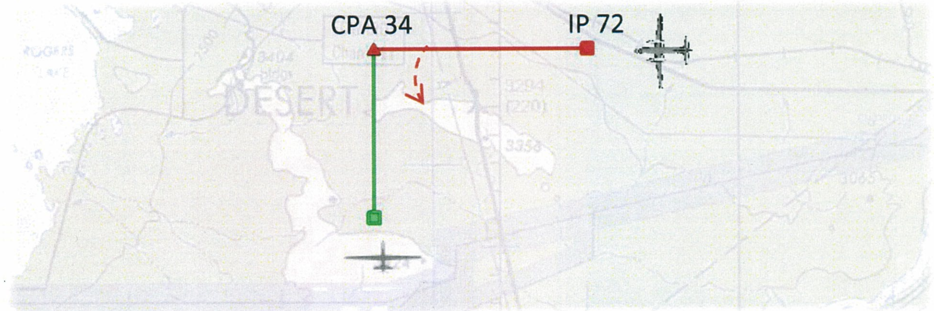


Tolerance (sec): ± 10

COMEX TIME: 0755			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP22	**N34° 49.71'**	**W117° 35.30'**	16000	7.5	**120**	
	N34° 49' 42.3"	**W117° 35' 18.0"**	-1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**120**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:58	Version 9
Card#	**L16D**		Intruder 1

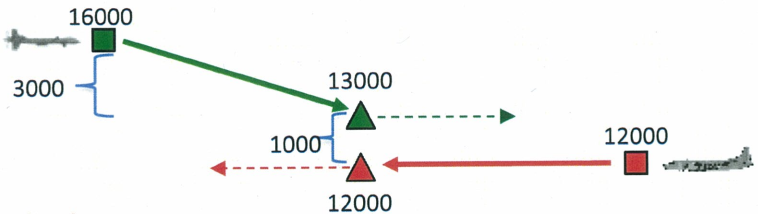


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	↶ **150**

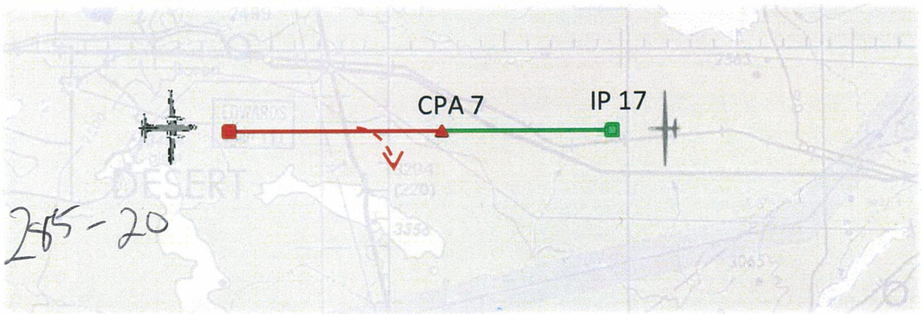


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP72	**N34° 57.05'**	**W117° 26.15'**	12000	7.5	**150**	
	N34° 57' 03.0"	**W117° 26' 09.0"**	0	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:14	Version 9
Card# a	**L15A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

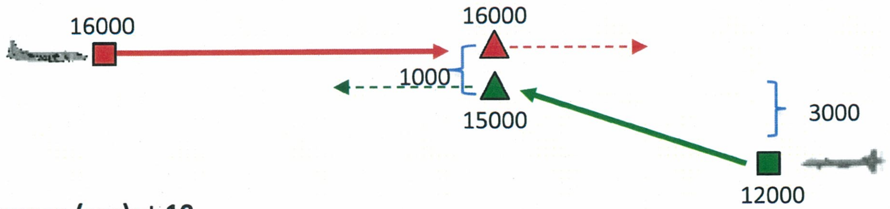
LOST LINK MISSION:

DECONFLICTION ALT: **15000**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

15000	**MAINTAIN HDG**

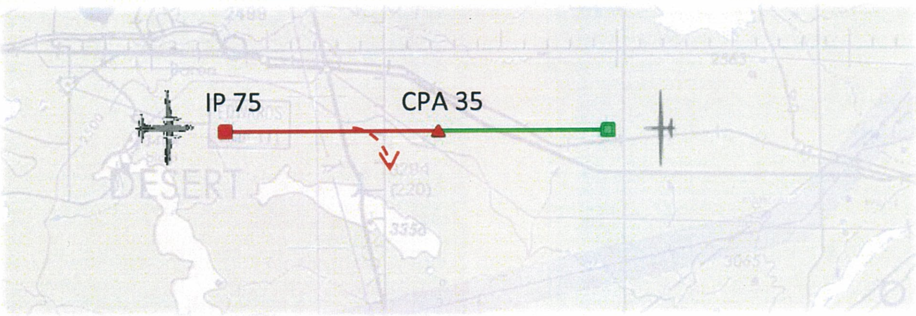


Tolerance (sec): ± 10

COMEX TIME: 0805			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	12000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:14	Version 9
Card#	**L15A**		Intruder 1

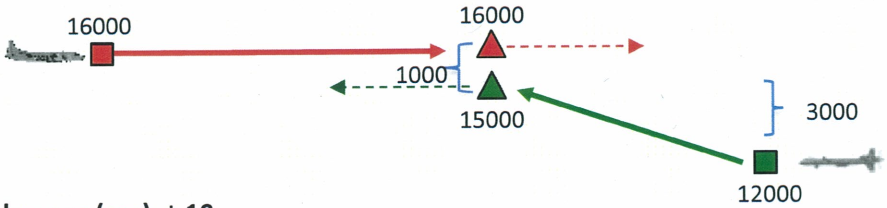


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **16000**

ABORT PROCEDURE

16000	**120**

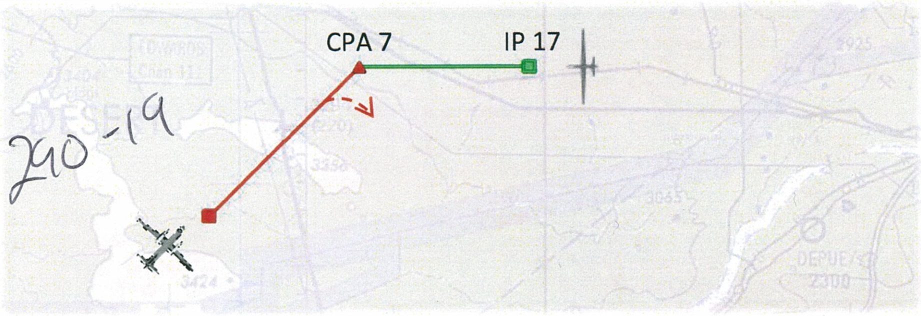


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP75	**N34° 57.09'**	**W117° 36.77'**	16000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:36	Version 9
Card# 10	**L15C**		Ownship



240-19

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

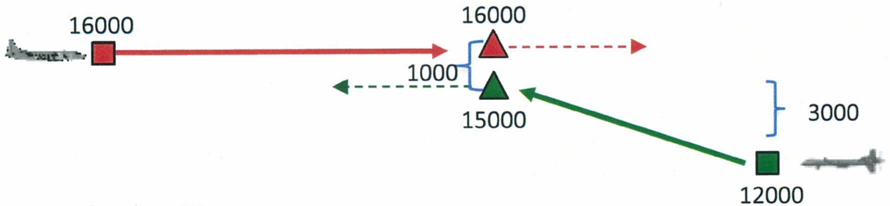
LOST LINK MISSION:

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

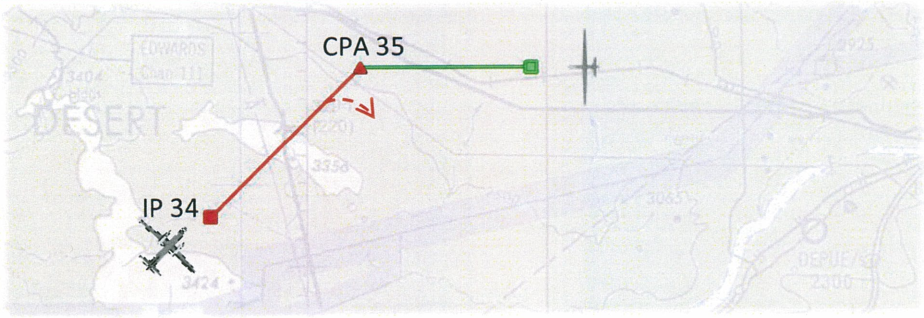


Tolerance (sec): ± 10

COMEX TIME: 0817			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	12000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC	S/N:36	Version 9
Card#	**L15C**		Intruder 1

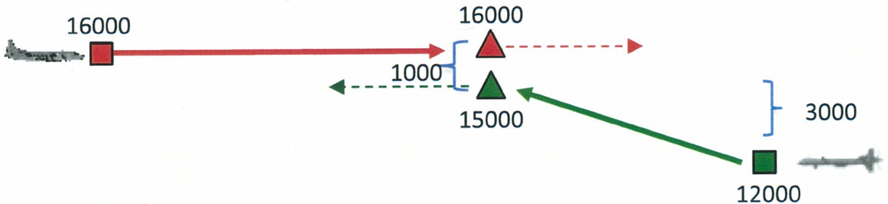


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**120**

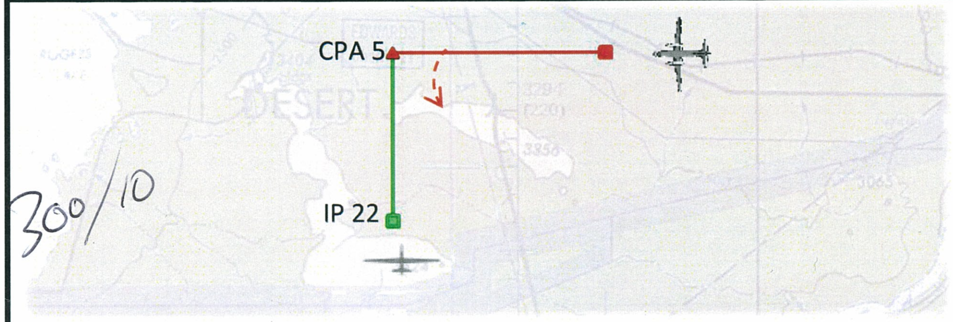


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	**N34° 51.79'**	**W117° 34.09'**	16000	7.5	**150**	
	N34° 51' 47.2"	**W117° 34' 05.4"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:56	Version 9
Card# 11	**L15D**		Ownship



300/10

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

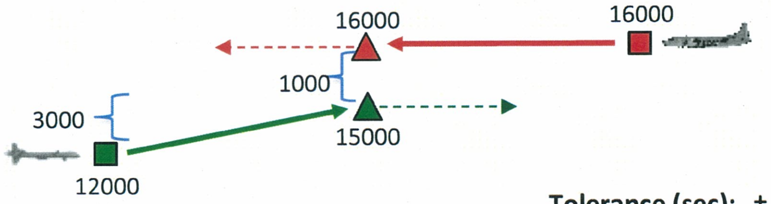
LOST LINK MISSION:

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

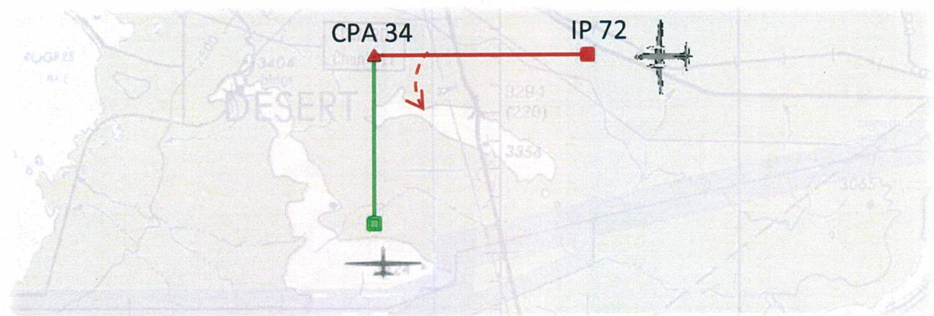


Tolerance (sec): ± 10

COMEX TIME: 0826			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP22	**N34° 49.71'**	**W117° 35.30'**	12000	7.5	**120**	
	N34° 49' 42.3"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	15000	0.0	**120**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:56	Version 9
Card#	**L15D**		Intruder 1

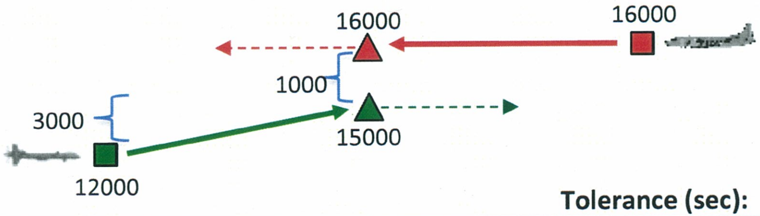


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	← **150**

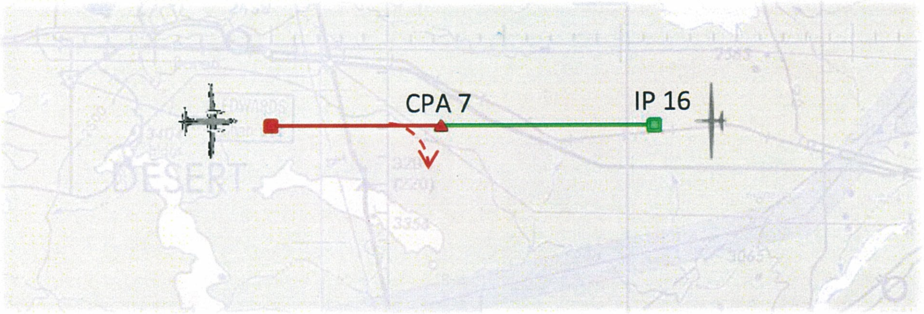


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP72	**N34° 57.05'**	**W117° 26.15'**	16000	7.5	**150**	
	N34° 57' 03.0"	**W117° 26' 09.0"**	0	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	16000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:10	Version 9
Card#	**L13A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

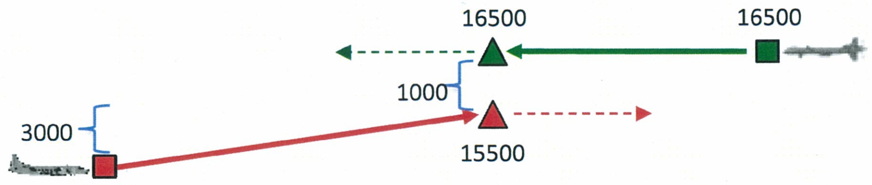
LOST LINK MISSION:

DECONFLICTION ALT: **16500**

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

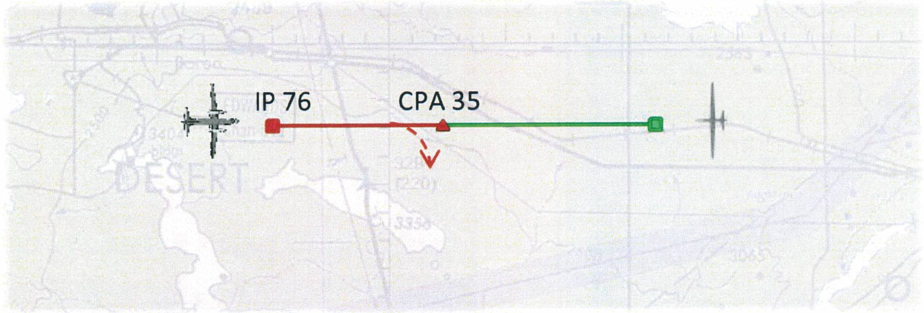


Tolerance (sec): ± 10

COMEX TIME: 0835			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:10	Version 9
Card#	**L13A**		Intruder 1

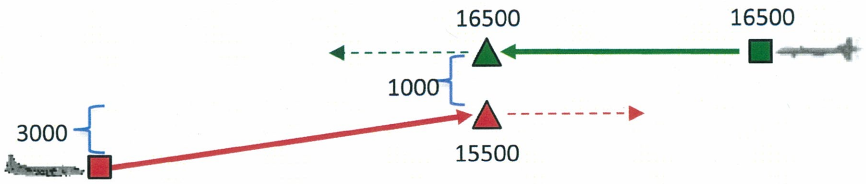


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **15500**

ABORT PROCEDURE

15500	**120**

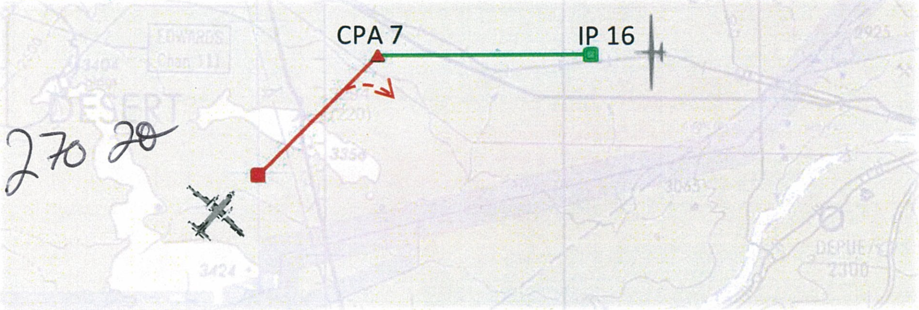


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP76	**N34° 57.09'**	**W117° 38.19'**	12500	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:32	Version 9
Card# B	L13C		Ownship



270 20

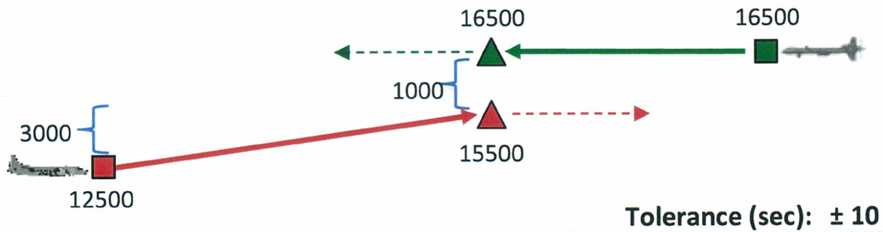
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE
16500 | **MAINTAIN HDG**

☐ AR 1 ☑ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



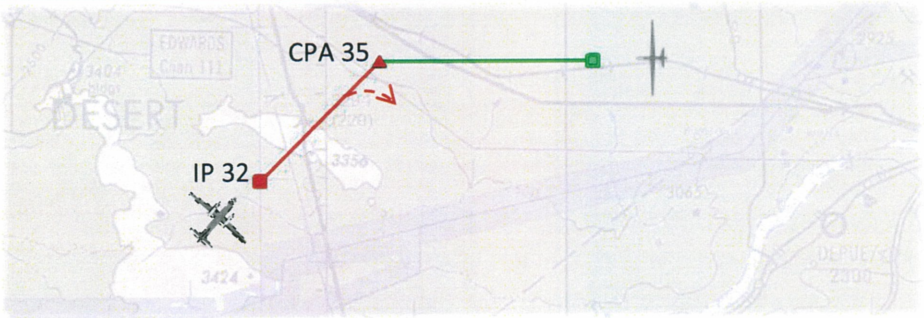
Tolerance (sec): ± 10

COMEX TIME: 0845
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

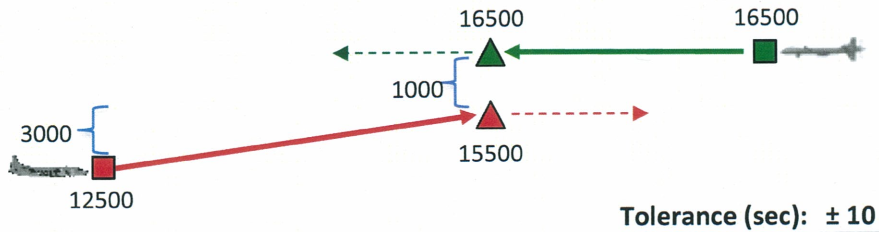
FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:32	Version 9
Card#	L13C		Intruder 1



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE
15500 | **120**



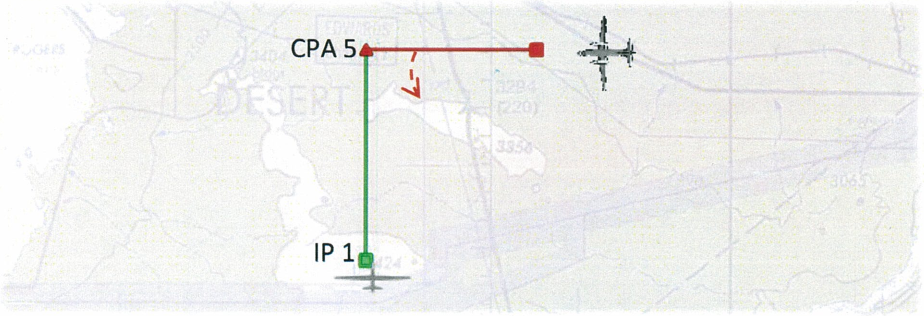
Tolerance (sec): ± 10

COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	12500	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:52	Version 9
Card# 14	**L13D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

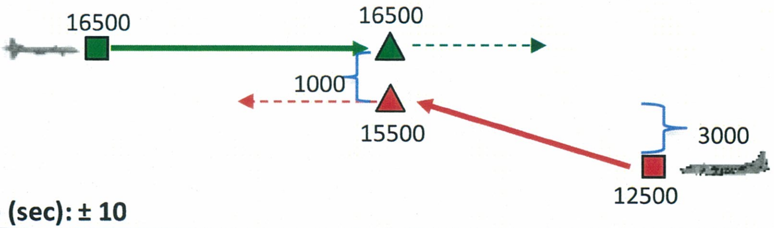
LOST LINK MISSION:

DECONFLICTION ALT:
16500

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

16500	**MAINTAIN HDG**

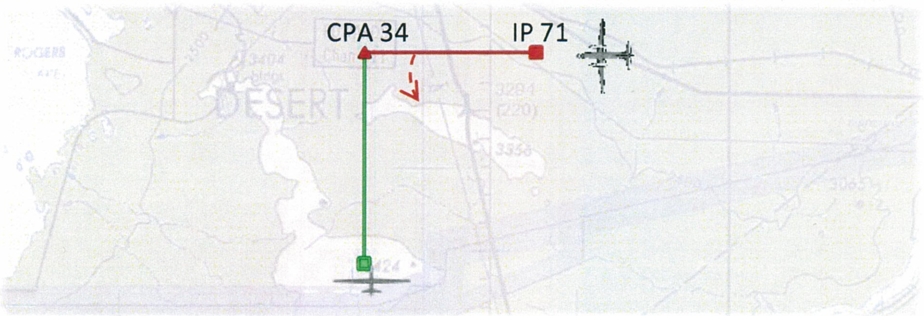


Tolerance (sec): ± 10

COMEX TIME: 0855	IP TIME ADJUST:					
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	16500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	16500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:52	Version 9
Card#	**L13D**		Intruder 1

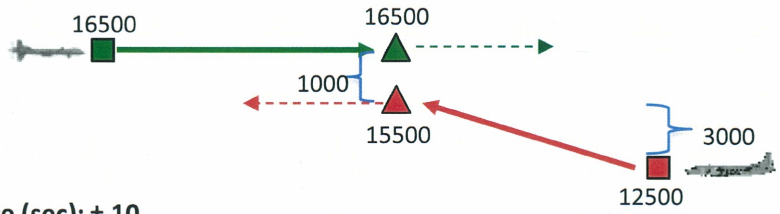


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	↶ **150**

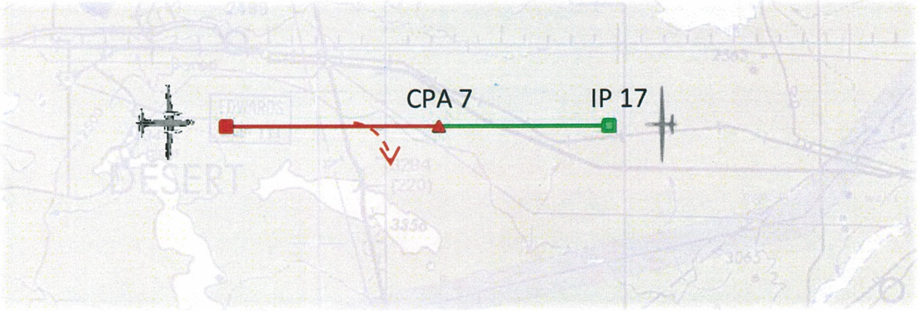


Tolerance (sec): ± 10

COMEX TIME:	IP TIME ADJUST:					
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	12500	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	15500	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:16	Version 9
Card# 15	**L16A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

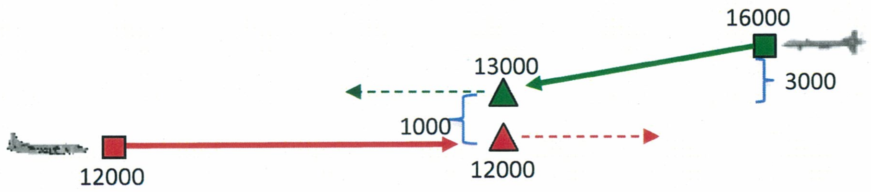
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

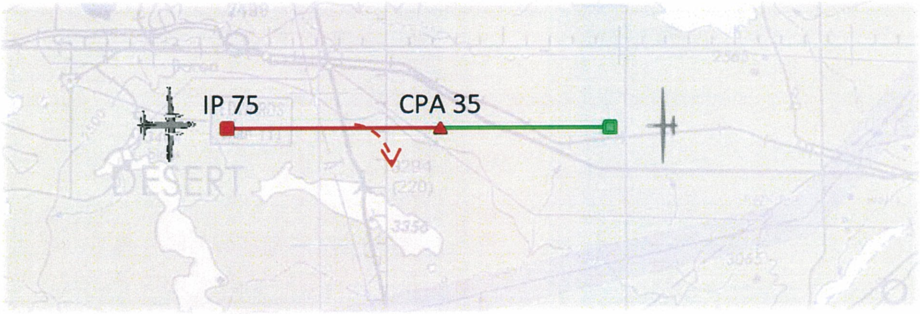
COMEX TIME: 0905

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	16000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:16	Version 9
Card#	**L16A**		Intruder 1

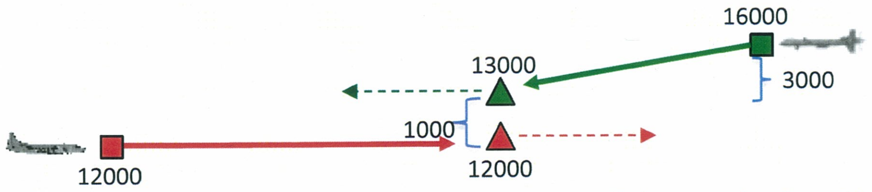


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



Tolerance (sec): ± 10

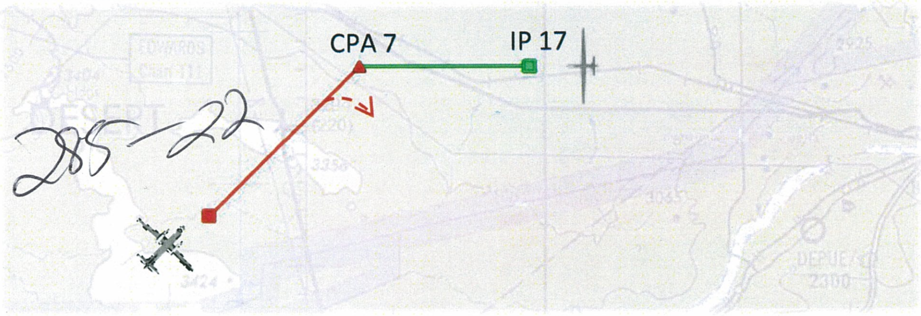
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP75	**N34° 57.09'**	**W117° 36.77'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:38	Version 9
Card# 16	**L16C**	Ownship	



285-22

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

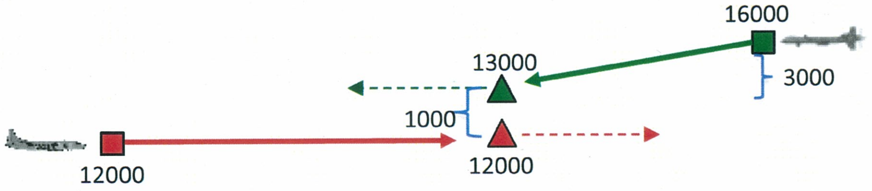
LOST LINK MISSION:

DECONFLICTION ALT: 13000

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

13000	MAINTAIN HDG



Tolerance (sec): ± 10

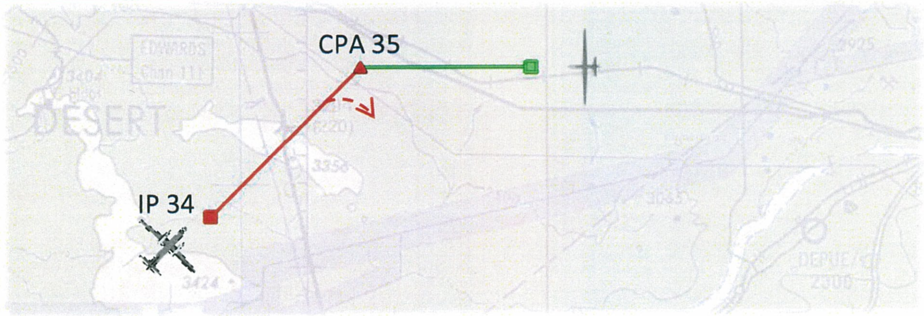
COMEX TIME: 0916

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	N34° 57.09'	W117° 18.58'	16000	7.5	120	
	N34° 57' 05.4"	W117° 18' 34.7"	-1000	258		
CPA7	N34° 57.09'	W117° 27.62'	13000	0.0	120	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:38	Version 9
Card#	**L16C**	Intruder 1	

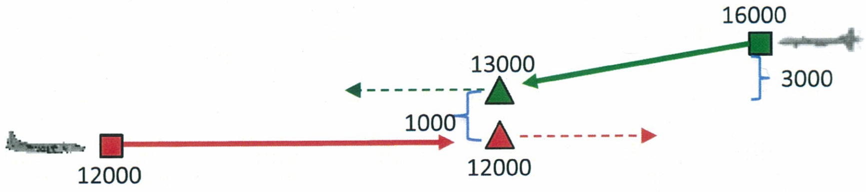


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 12000

ABORT PROCEDURE

12000	120



Tolerance (sec): ± 10

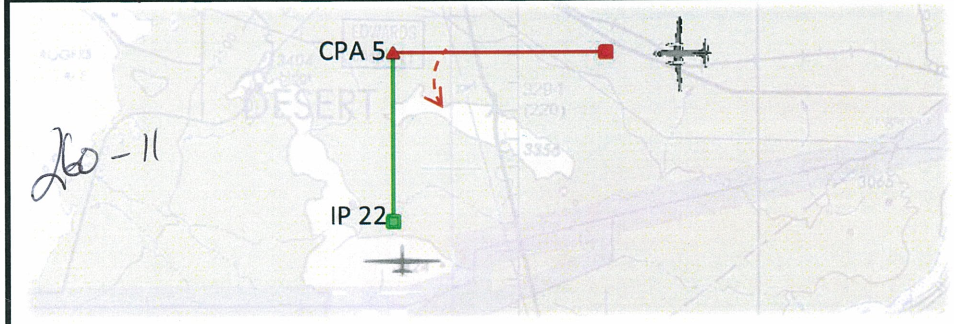
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	N34° 51.79'	W117° 34.09'	12000	7.5	150	
	N34° 51' 47.2"	W117° 34' 05.4"	0	033		
CPA35	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:58	Version 9
Card# 17	L16D		Ownship



260 - 11

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

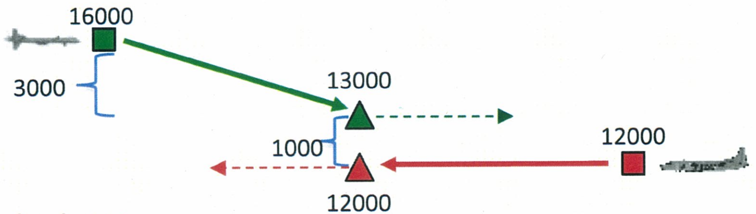
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

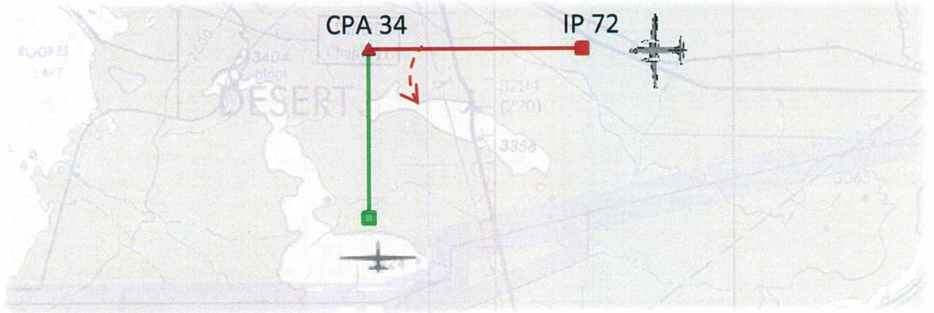


Tolerance (sec): ± 10

COMEX TIME: 0925			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP22	N34° 49.71'	W117° 35.30'	16000	7.5	120	
	N34° 49' 42.3"	W117° 35' 18.0"	-1000	348		
CPA5	N34° 57.05'	W117° 35.30'	13000	0.0	120	
	N34° 57' 03.0"	W117° 35' 18.0"	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:58	Version 9
Card#	L16D		Intruder 1

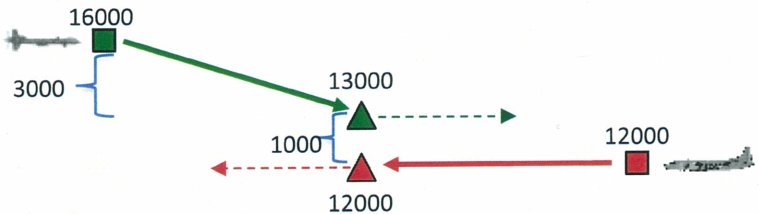


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	150

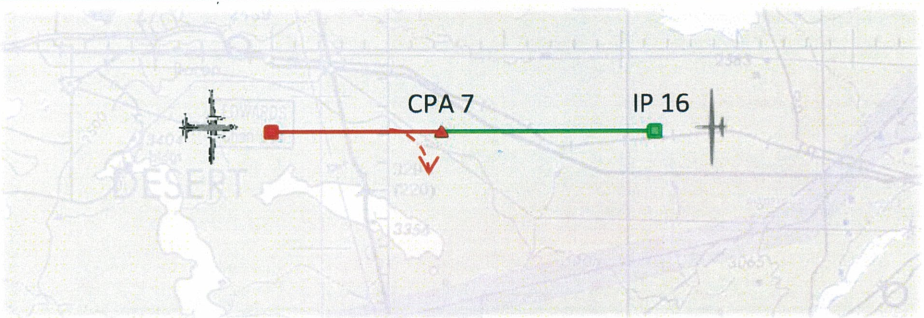


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP72	N34° 57.05'	W117° 26.15'	12000	7.5	150	
	N34° 57' 03.0"	W117° 26' 09.0"	0	258		
CPA34	N34° 57.05'	W117° 35.30'	12000	0.0	150	
	N34° 57' 03.0"	W117° 35' 18.0"	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:12	Version 9
Card# 16	**L14A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

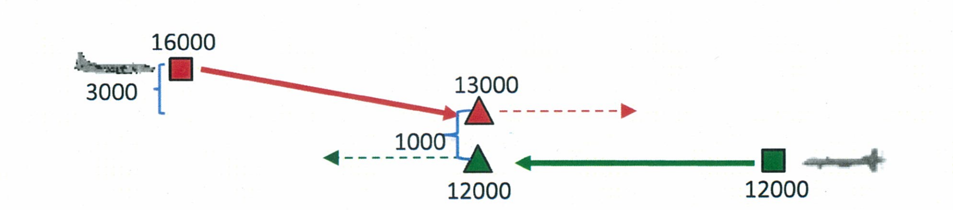
LOST LINK MISSION:

DECONFLICTION ALT: 12000

☐ AR 1	☑ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☑ TRACKER

ABORT PROCEDURE

12000	MAINTAIN HDG

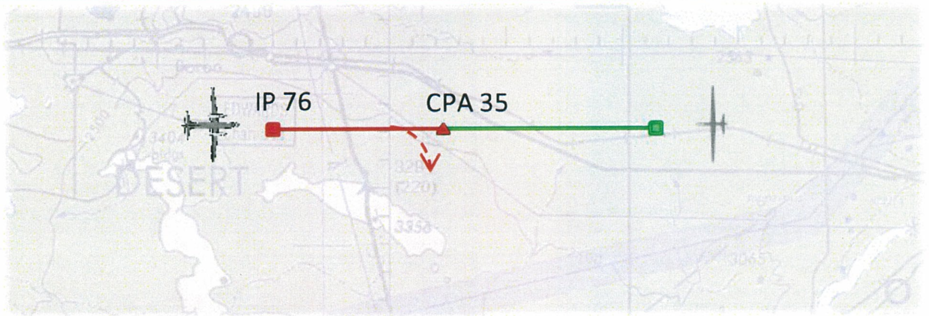


Tolerance (sec): ± 10

COMEX TIME: 0935			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:12	Version 9
Card#	**L14A**		Intruder 1

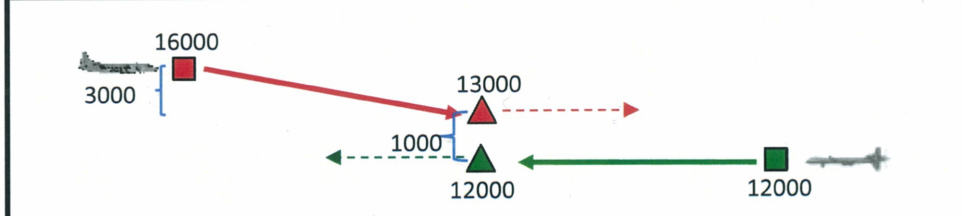


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120



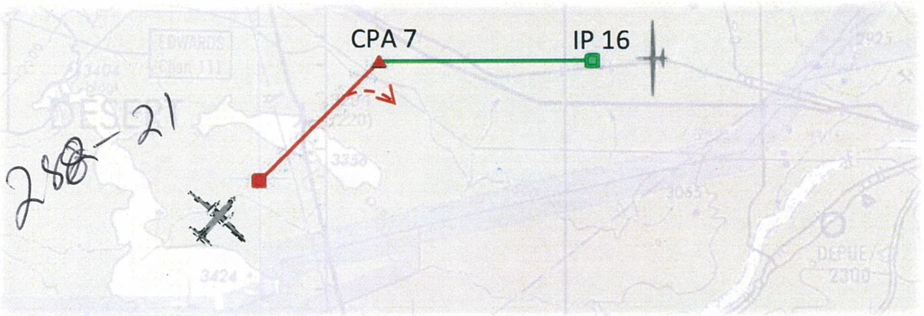
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP76	N34° 57.09'	W117° 38.19'	16000	8.5	140	
	N34° 57' 05.4"	W117° 38' 11.2"	-1000	078		
CPA35	N34° 57.09'	W117° 27.62'	13000	0.0	140	
	N34° 57' 05.4"	W117° 27' 37.2"	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:34	Version 9

Card# 1a	L14C	Ownship



280-21

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

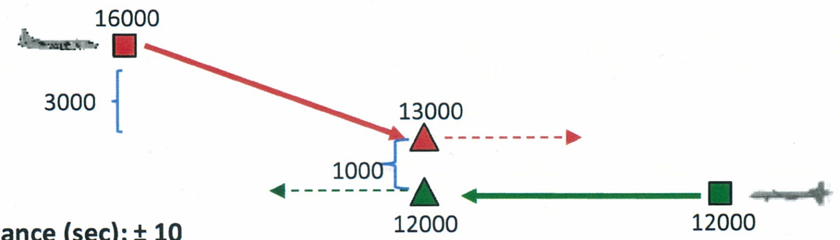
LOST LINK MISSION:

DECONFLICTION ALT: **12000**

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



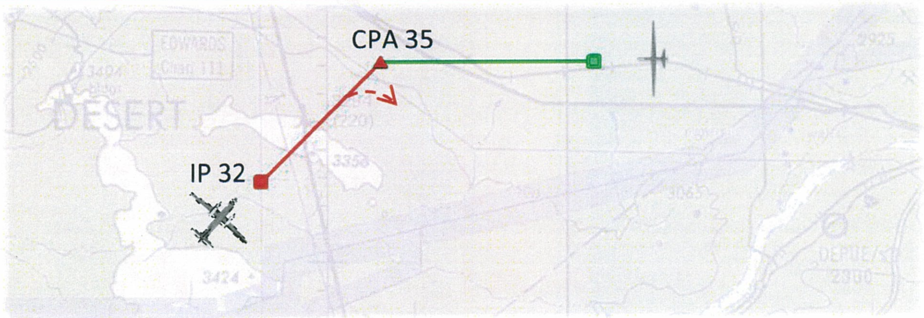
Tolerance (sec): ± 10

COMEX TIME: 0945			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:34	Version 9

Card#	L14C	Intruder 1

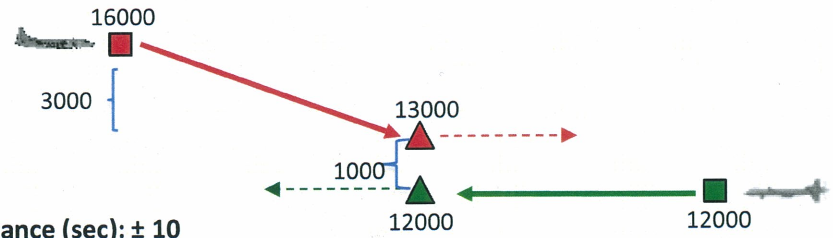


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**120**

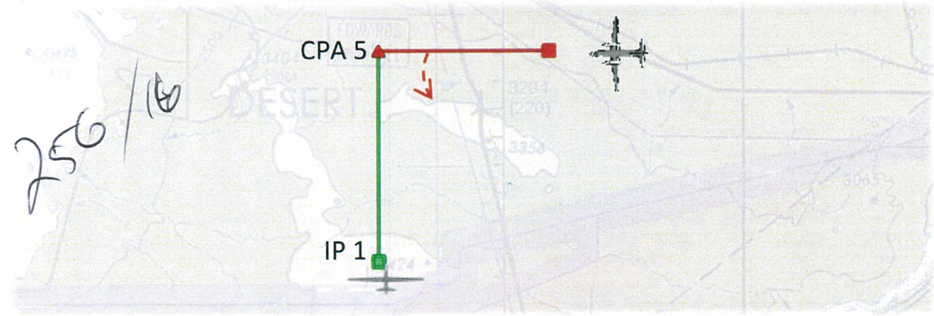


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	16000	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	-1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:54	Version 9
Card# 20	**L14D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

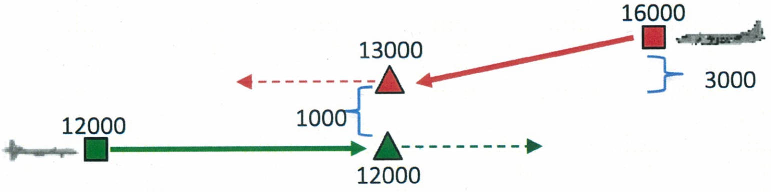
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

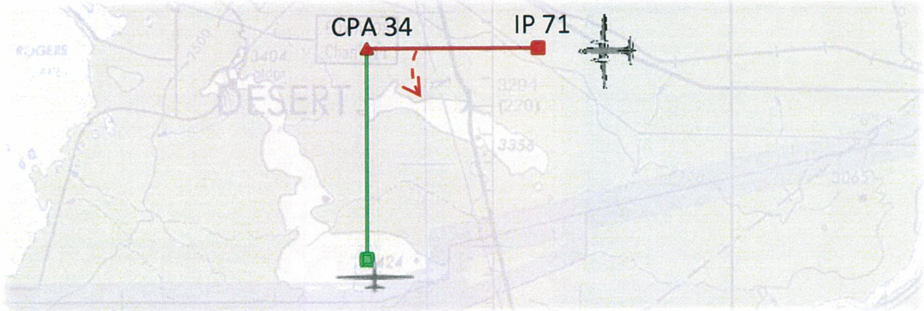
COMEX TIME: 0955

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:54	Version 9
Card#	**L14D**		Intruder 1

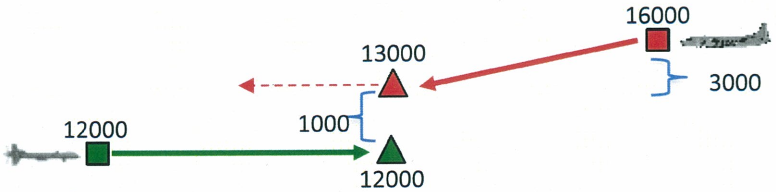


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

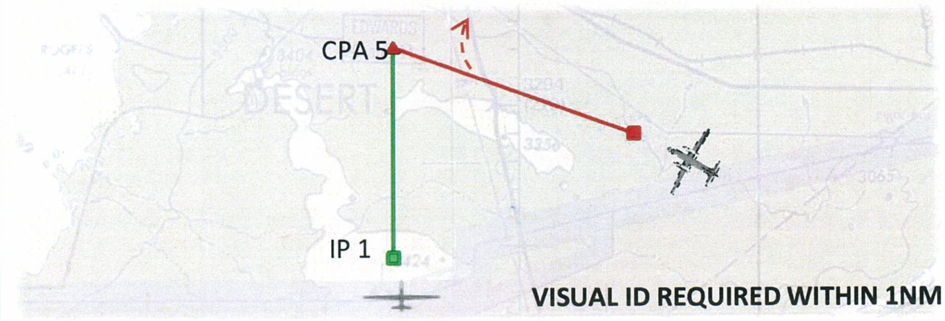
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	16000	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	-1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:60	Version 9
Card# 21	**L12E**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

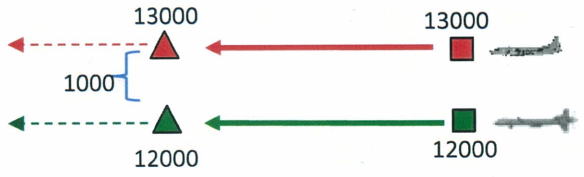
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

12000	MAINTAIN HDG

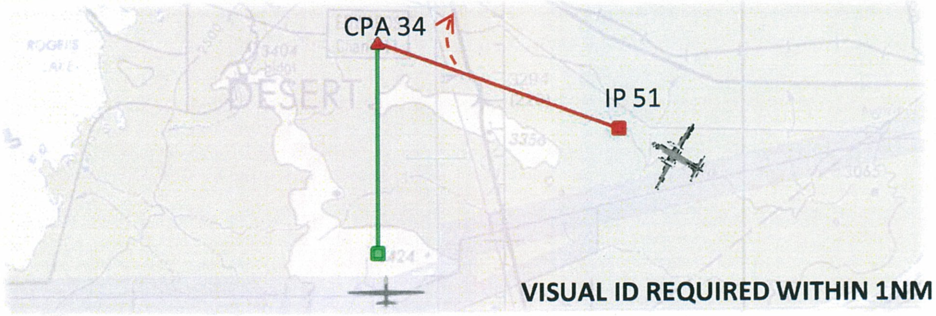


Tolerance (sec): ± 10

COMEX TIME: 1005 / 1011			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	N34° 49.55'	W117° 35.30'	12000	7.5	150	
	N34° 49' 33.0"	W117° 35' 18.0"	0	348		
CPA5	N34° 57.05'	W117° 35.30'	12000	0.0	150	
	N34° 57' 03.0"	W117° 35' 18.0"	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:60	Version 9
Card#	**L12E**		Intruder 1



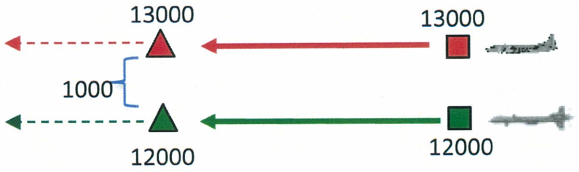
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	030

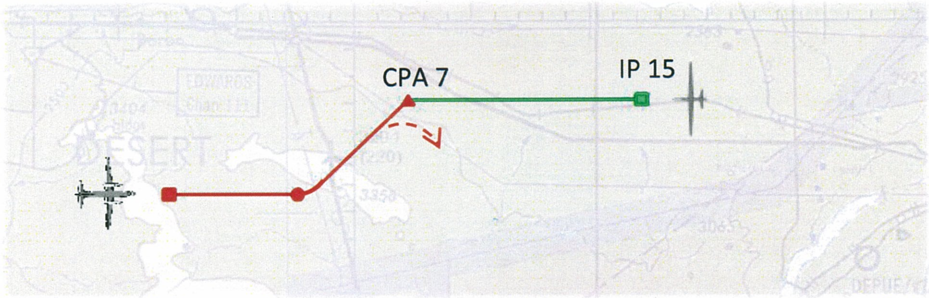


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP51	N34° 53.97'	W117° 24.98'	13000	9.0	180	
	N34° 53' 58.3"	W117° 24' 58.9"	0	278		
CPA34	N34° 57.05'	W117° 35.30'	13000	0.0	180	
	N34° 57' 03.0"	W117° 35' 18.0"	0	278		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:40	Version 9
Card# 22	**L12M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

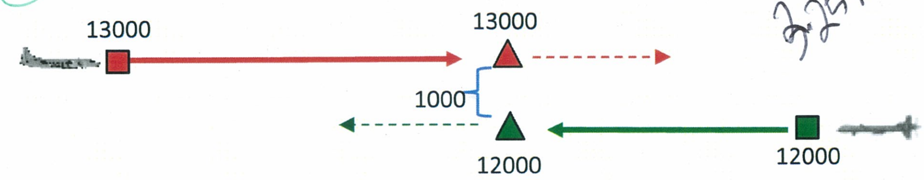
DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER

3.25 min



Tolerance (sec): ± 10

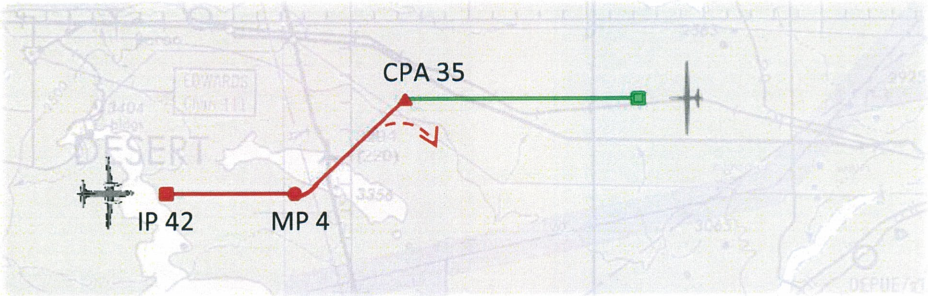
COMEX TIME: 1020

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP15	**N34° 57.09'**	**W117° 17.71'**	12000	8.1	**150**	
	N34° 57' 05.4"	**W117° 17' 42.4"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:40	Version 9
Card#	**L12M**		Intruder 1



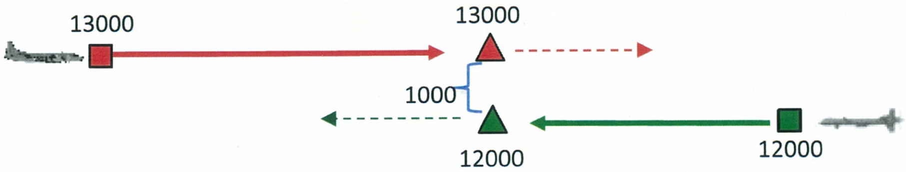
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

NOTE: Cooperative/non-maneuvering



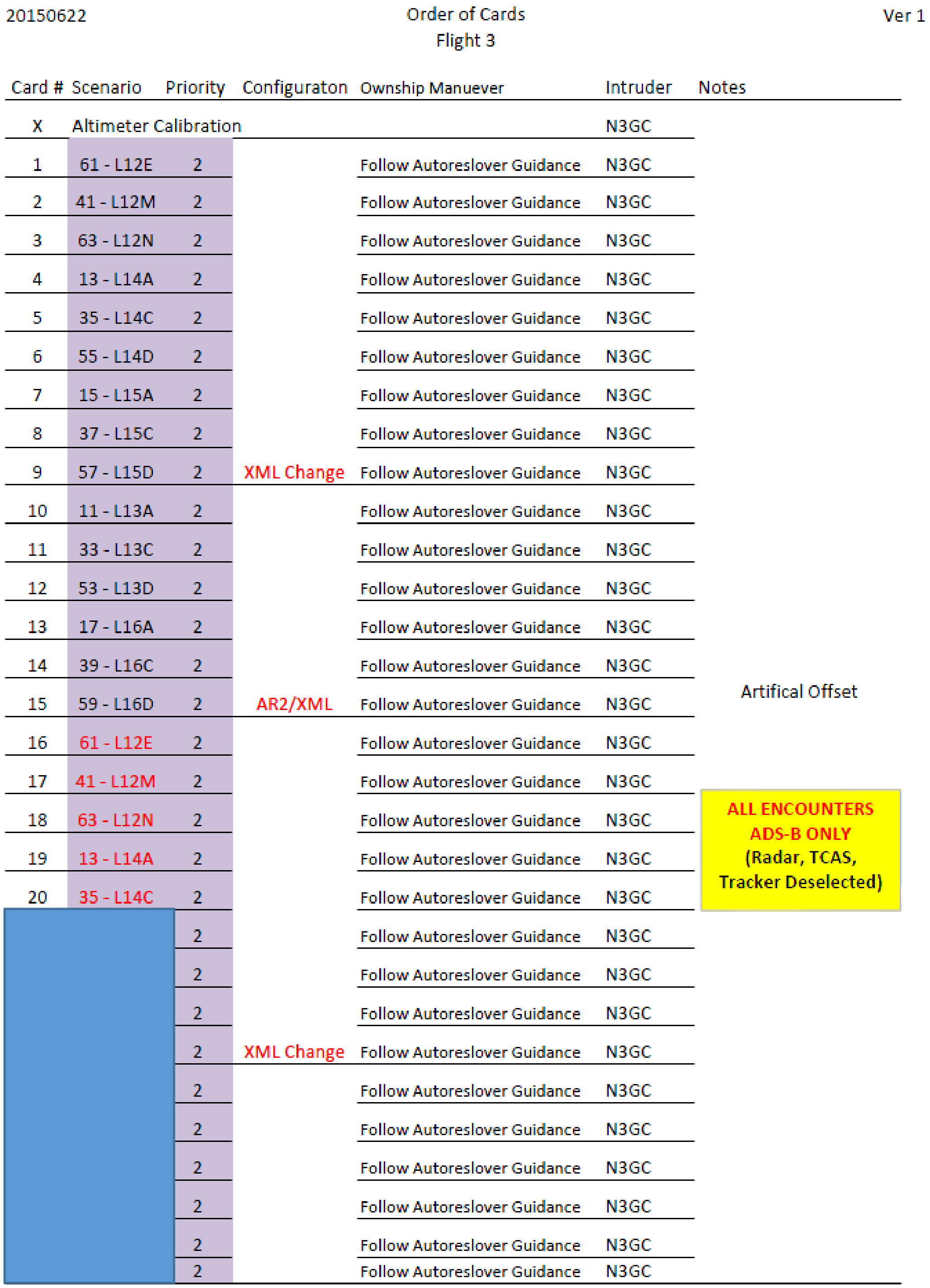
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP42	**N34° 53.63'**	**W117° 37.81'**	13000	4.5	**180**	
	N34° 53' 37.7"	**W117° 37' 48.7"**	0	78		
MP4	**N34° 53.63'**	**W117° 32.33'**	13000	5.2	**180**	
	N34° 53' 37.7"	**W117° 32' 19.5"**	0	33		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	33		

12.3 Flight 3 Redlined Flight Cards



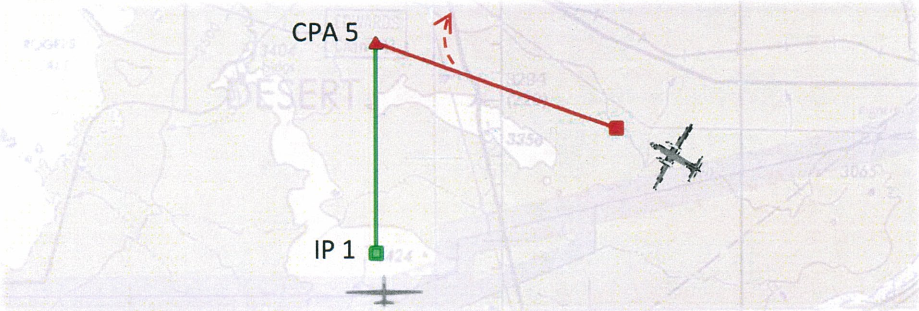
20150622

Order of Cards
Flight 3

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC	
1	61 - L12E	2		Follow Autoreslover Guidance	N3GC	
2	41 - L12M	2		Follow Autoreslover Guidance	N3GC	
3	63 - L12N	2		Follow Autoreslover Guidance	N3GC	
4	13 - L14A	2		Follow Autoreslover Guidance	N3GC	
5	35 - L14C	2		Follow Autoreslover Guidance	N3GC	
6	55 - L14D	2		Follow Autoreslover Guidance	N3GC	
7	15 - L15A	2		Follow Autoreslover Guidance	N3GC	
8	37 - L15C	2		Follow Autoreslover Guidance	N3GC	
9	57 - L15D	2	XML Change	Follow Autoreslover Guidance	N3GC	
10	11 - L13A	2		Follow Autoreslover Guidance	N3GC	
11	33 - L13C	2		Follow Autoreslover Guidance	N3GC	
12	53 - L13D	2		Follow Autoreslover Guidance	N3GC	
13	17 - L16A	2		Follow Autoreslover Guidance	N3GC	
14	39 - L16C	2		Follow Autoreslover Guidance	N3GC	
15	59 - L16D	2	AR2/XML	Follow Autoreslover Guidance	N3GC	Artifical Offset
16	61 - L12E	2		Follow Autoreslover Guidance	N3GC	
17	41 - L12M	2		Follow Autoreslover Guidance	N3GC	
18	63 - L12N	2		Follow Autoreslover Guidance	N3GC	ALL ENCOUNTERS ADS-B ONLY (Radar, TCAS, Tracker Deselected)
19	13 - L14A	2		Follow Autoreslover Guidance	N3GC	
20	35 - L14C	2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2	XML Change	Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	
		2		Follow Autoreslover Guidance	N3GC	

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:61	Version 9
Card# 1	**L12E**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

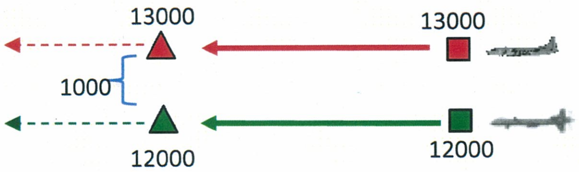
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☒ RADAR	☒ TCAS	☒ TRACKER



- Rt 007

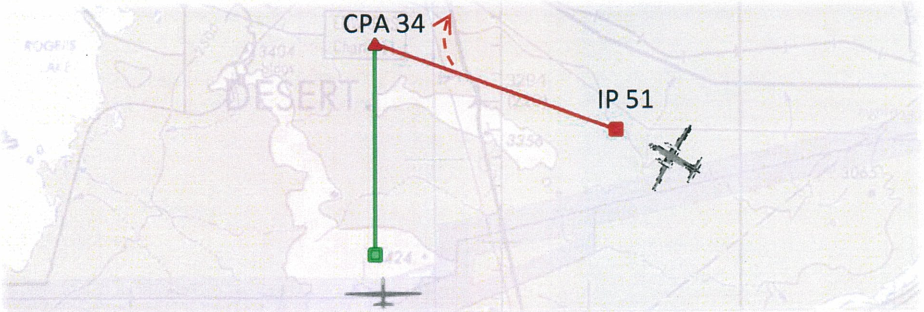
Tolerance (sec): ± 10

COMEX TIME: 0658			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	N 10 sec Early
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Little Early Late

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:61	Version 9
Card#	**L12E**		Intruder 1

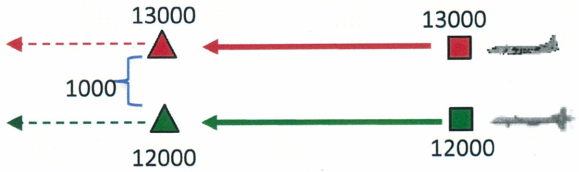


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**030**



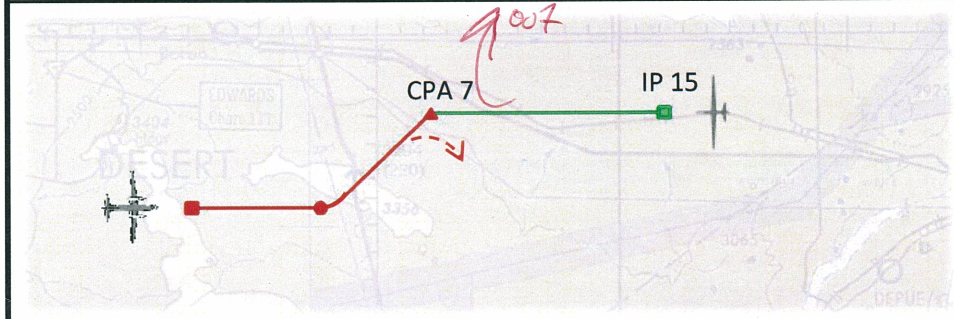
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP51	**N34° 53.97'**	**W117° 24.98'**	13000	9.0	**180**	
	N34° 53' 58.3"	**W117° 24' 58.9"**	0	278		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**180**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	278		

NOTE: Expect ownship maneuver

ON time

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:41	Version 9
Card# 2	**L12M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete. 3.25
5. TC announces next Card Number.

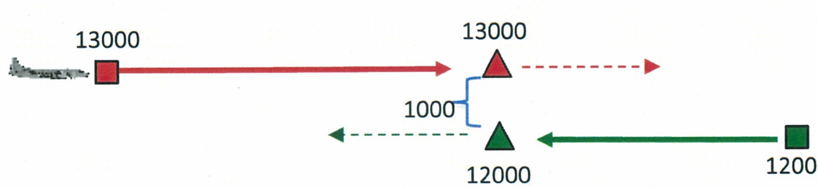
LOST LINK MISSION:

DECONFLICTION ALT: 12000

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

ABORT PROCEDURE

12000	MAINTAIN HDG



RT 007

Tolerance (sec): ± 10

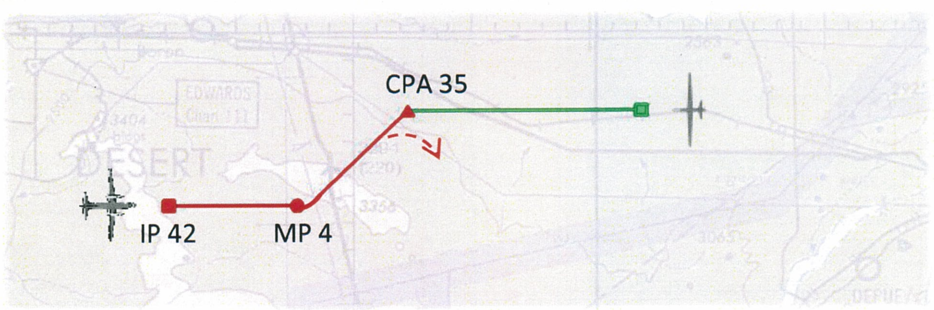
COMEX TIME: 0659 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP15	**N34° 57.09'**	**W117° 17.71'**	12000	8.1	**150**	
	N34° 57' 05.4"	**W117° 17' 42.4"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Massive Right turn Excessive?

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:41	Version 9
Card#	**L12M**		Intruder 1



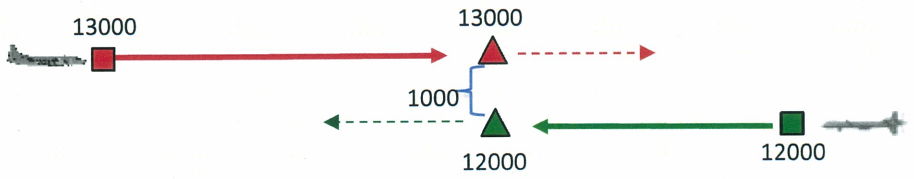
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120

NOTE: Expect ownship maneuver

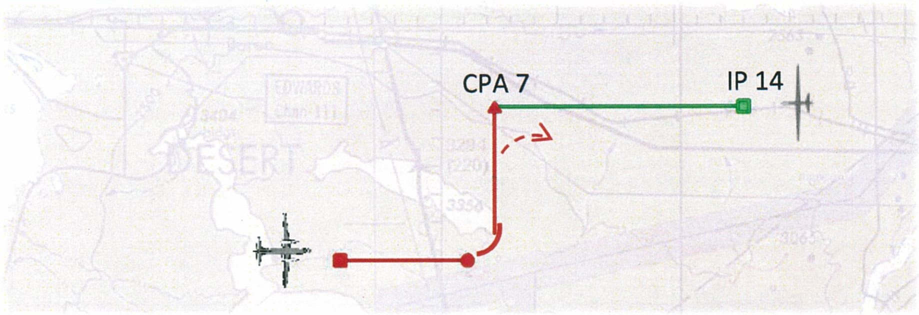


Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP42	**N34° 53.63'**	**W117° 37.81'**	13000	4.5	**180**	
	N34° 53' 37.7"	**W117° 37' 48.7"**	0	78		
MP4	**N34° 53.63'**	**W117° 32.33'**	13000	5.2	**180**	
	N34° 53' 37.7"	**W117° 32' 19.5"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:63	Version 9
Card# 3	**L12N**	Ownship	



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

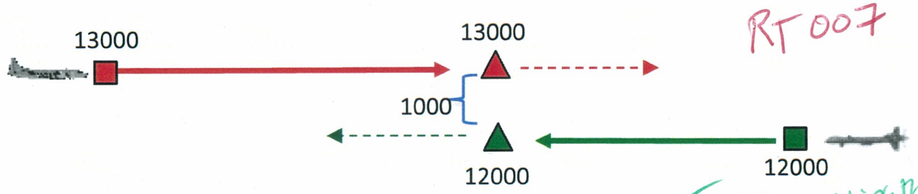
LOST LINK MISSION:

DECONFLICTION ALT: 12000

ABORT PROCEDURE

12000	MAINTAIN HDG

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



RT 007

TCAS multipathing

Tolerance (sec): ± 10

COMEX TIME: 070

IP TIME ADJUST:

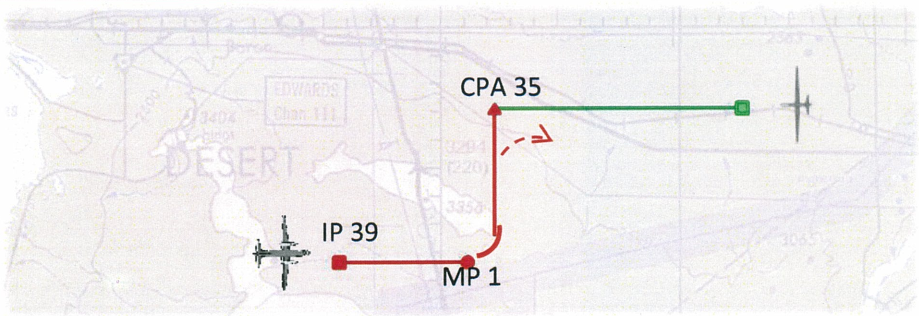
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP14	N34° 57.09'	W117° 16.95'	12000	8.8	150	
	N34° 57' 05.4"	W117° 16' 56.7"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Big turn to 007

3.5

FT-3, Configuration 1a	Aircraft: N3GC	S/N:63	Version 9
Card#	**L12N**	Intruder 1	



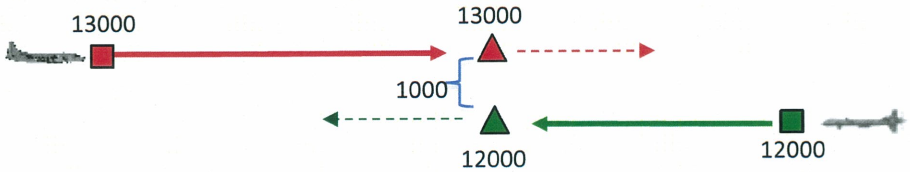
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	120

NOTE: Expect ownship maneuver



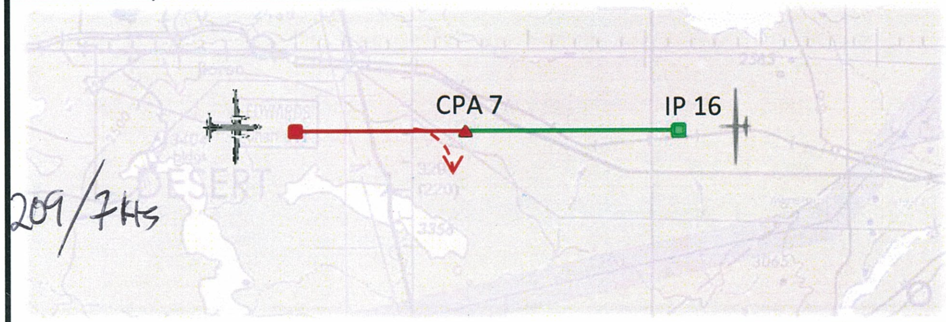
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP39	N34° 51.64'	W117° 34.27'	13000	4.5	180	
	N34° 51' 38.1"	W117° 34' 16.1"	0	078		
MP1	N34° 51.64'	W117° 28.78'	13000	5.5	180	
	N34° 51' 38.1"	W117° 28' 47.0"	0	348		
CPA35	N34° 57.09'	W117° 27.62'	13000	0.0	180	
	N34° 57' 05.4"	W117° 27' 37.2"	0	348		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:13	Version 9
Card# 4	L14A		Ownship



209/7Hs

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

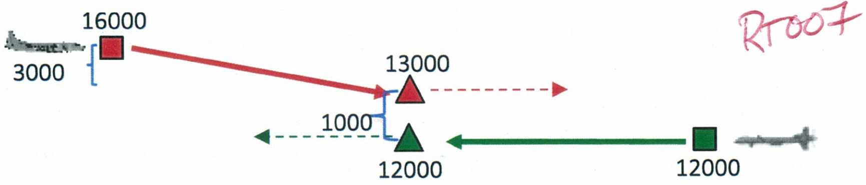
DECONFLICTION ALT: **12000**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**

RT007



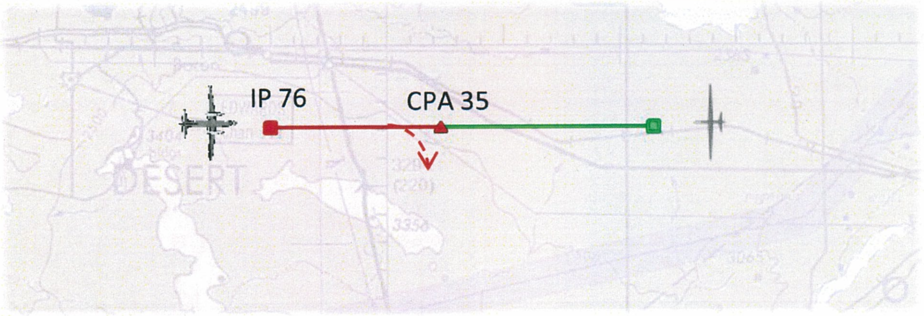
Tolerance (sec): ± 10

COMEX TIME: 0710 0720			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT007 again

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:13	Version 9
Card#	L14A		Intruder 1

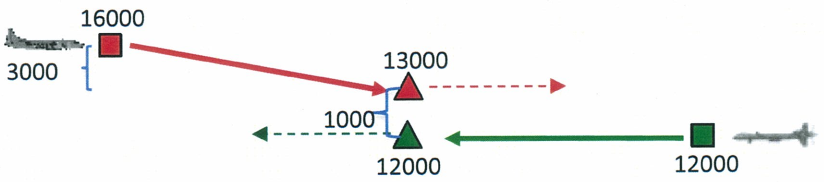


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**120**

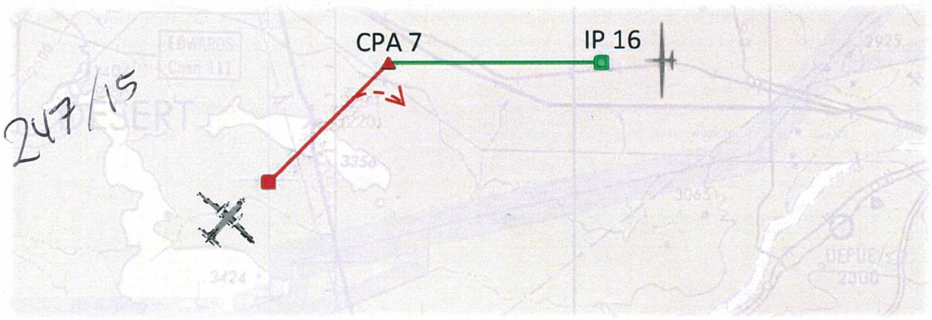


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP76	**N34° 57.09'**	**W117° 38.19'**	16000	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	-1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:35	Version 9
Card# 5	**L14C**		Ownship



247/15

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

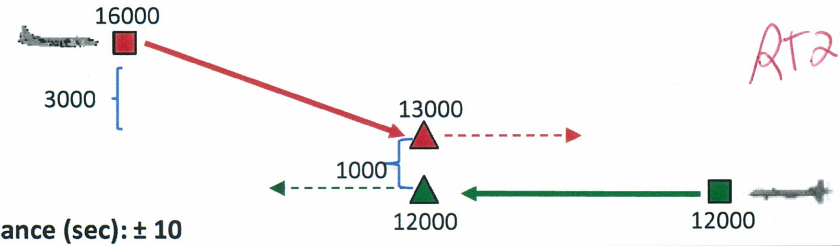
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



RT277

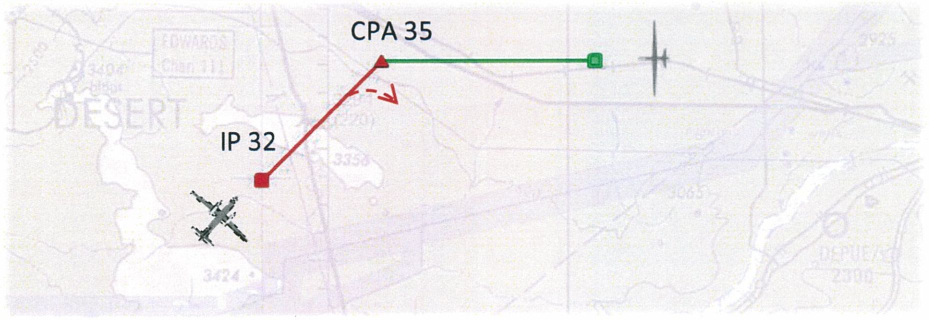
Tolerance (sec): ± 10

COMEX TIME: 0731			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Rt 277 20 degs

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:35	Version 9
Card#	**L14C**		Intruder 1

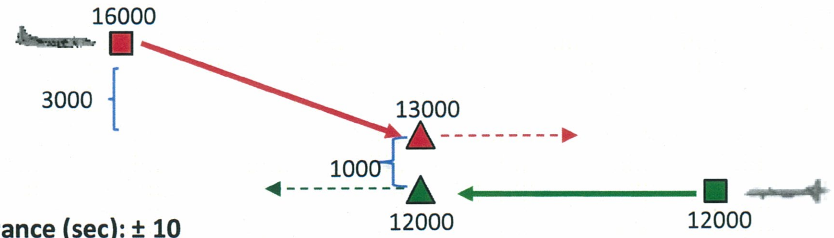


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

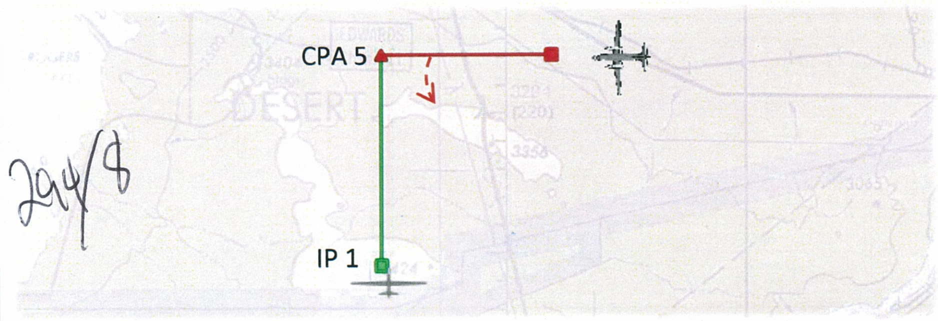


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	16000	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	-1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:55	Version 9
Card# 6	**L14D**		Ownship



294/8

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

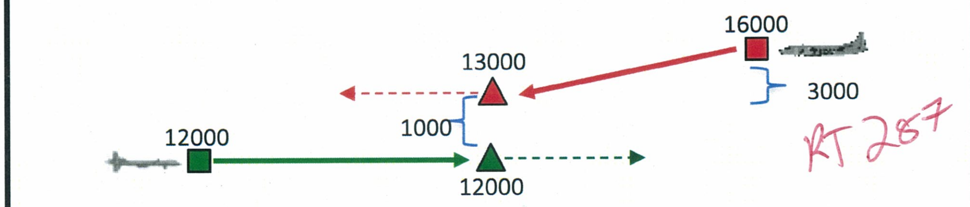
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



RT 287

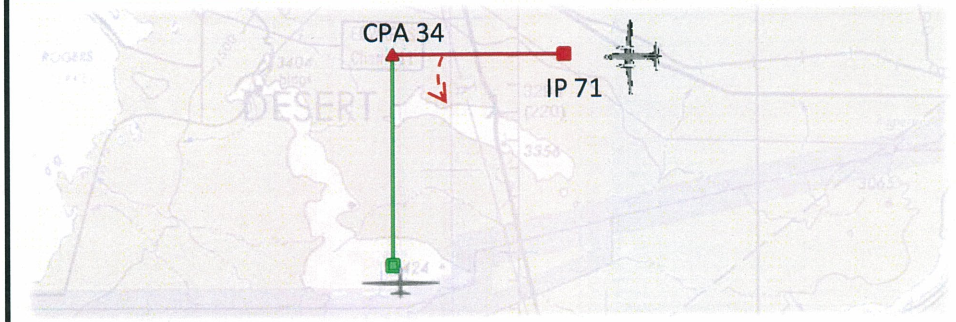
Tolerance (sec): ± 10

COMEX TIME: 0742			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	0742
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

270° turn 287 1st then to 017

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:55	Version 9
Card#	**L14D**		Intruder 1

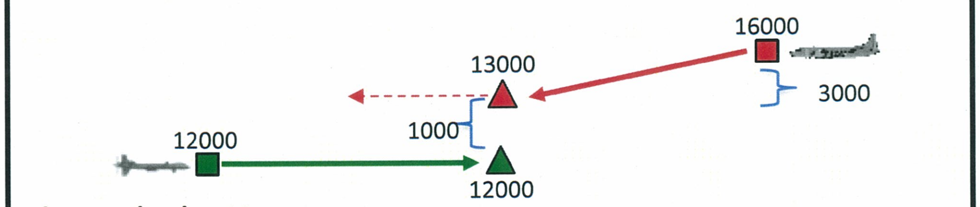


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**

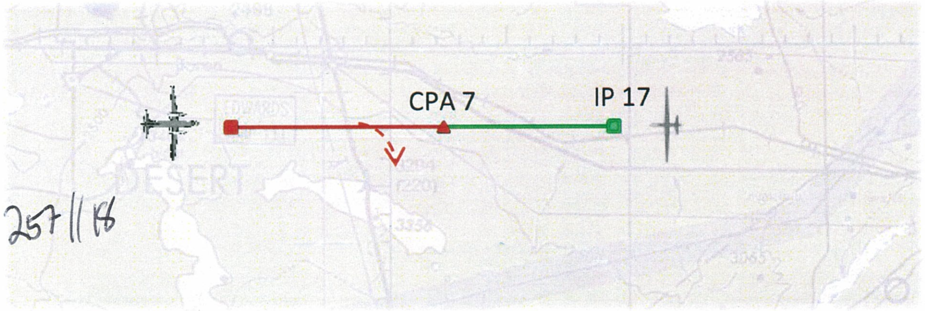


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	16000	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	-1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:15	Version 9
Card# 7	**L15A**		Ownship



257||18

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

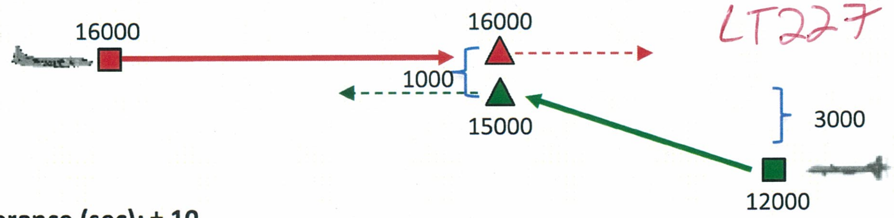
LOST LINK MISSION:

DECONFLICTION ALT: 15000

ABORT PROCEDURE

15000	MAINTAIN HDG

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



LT227

Tolerance (sec): ± 10

COMEX TIME: 0755 | IP TIME ADJUST:

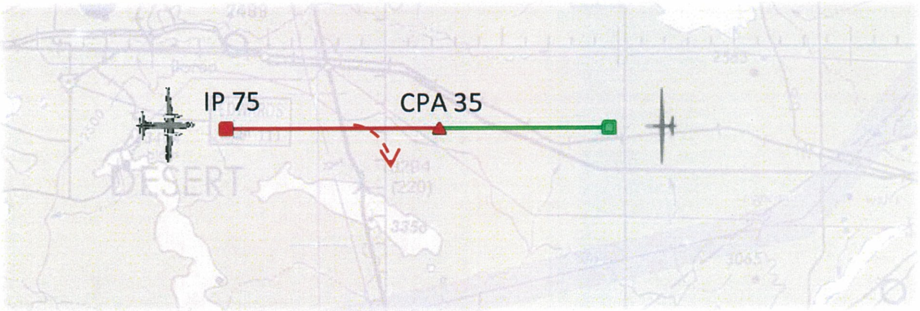
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	12000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

L 227.

Pilot Discretion for direction of turn

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:15	Version 9
Card#	**L15A**		Intruder 1

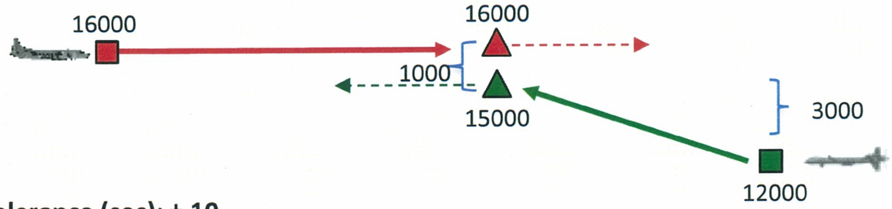


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 16000

ABORT PROCEDURE

16000	120



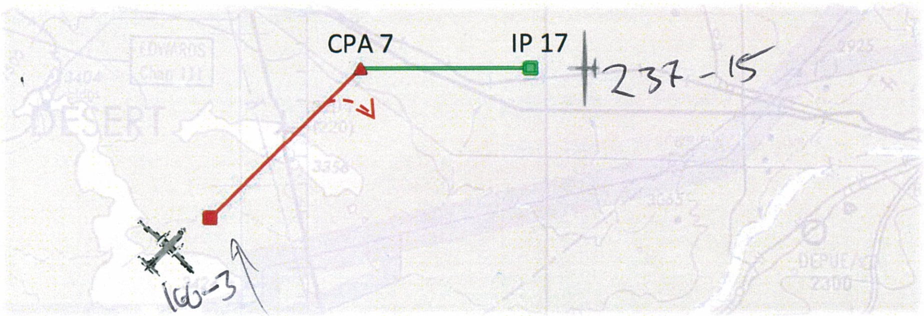
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP75	**N34° 57.09'**	**W117° 36.77'**	16000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:37	Version 9
Card# 8	**L15C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

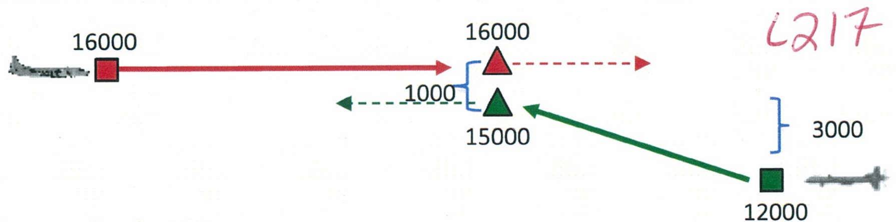
LOST LINK MISSION:

DECONFLICTION ALT:
15000

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☑ TRACKER

ABORT PROCEDURE

15000	**MAINTAIN HDG**



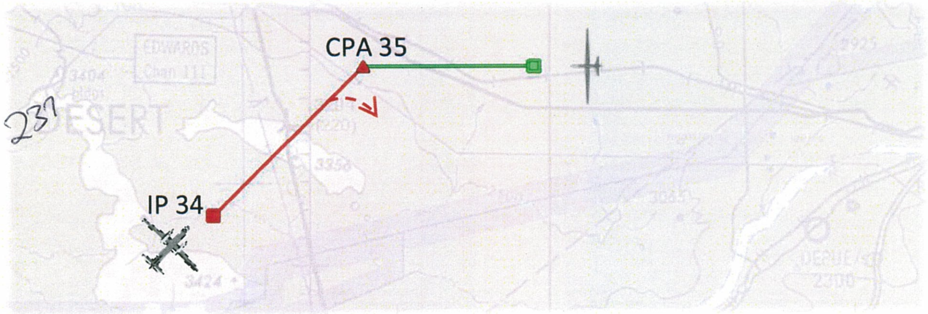
Tolerance (sec): ± 10

COMEX TIME: 0803		IP TIME ADJUST:				
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	12000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

L217 Early guidance Accept

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:37	Version 9
Card#	**L15C**		Intruder 1

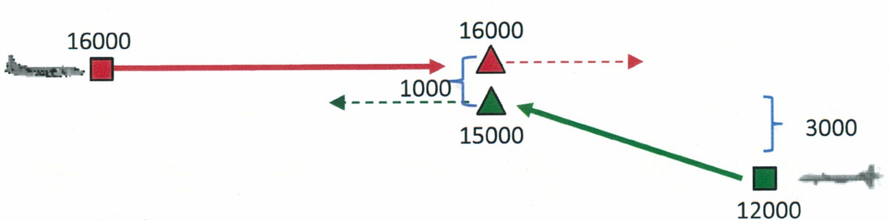


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**120**

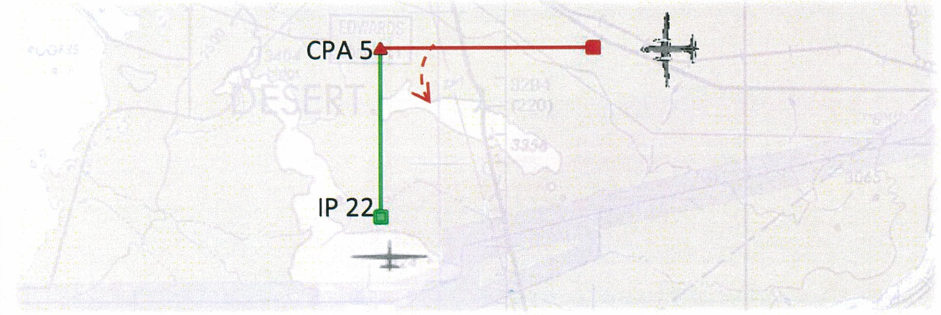


Tolerance (sec): ± 10

COMEX TIME:		IP TIME ADJUST:				
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	**N34° 51.79'**	**W117° 34.09'**	16000	7.5	**150**	
	N34° 51' 47.2"	**W117° 34' 05.4"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:57	Version 9
Card# 9	**L15D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

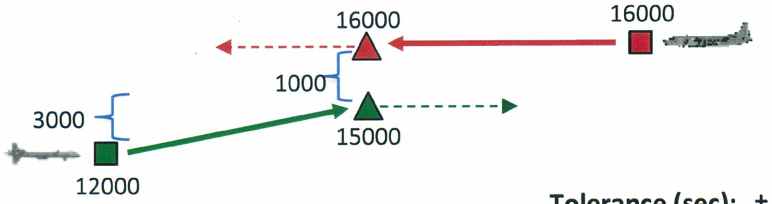
LOST LINK MISSION:

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0812

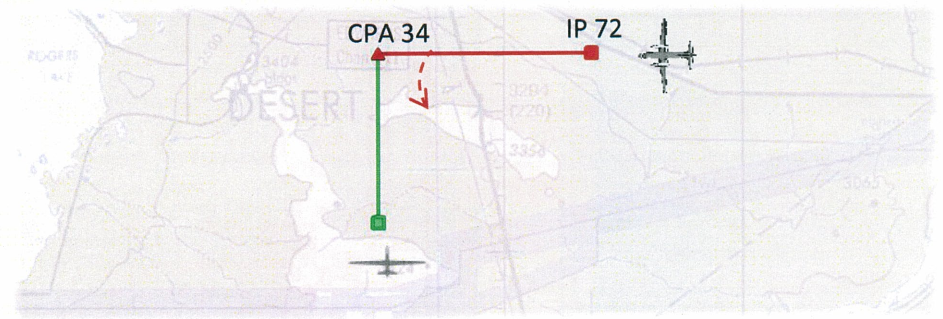
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP22	**N34° 49.71'**	**W117° 35.30'**	12000	7.5	**120**	
	N34° 49' 42.3"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	15000	0.0	**120**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

No Guidance Early 870

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:57	Version 9
Card#	**L15D**		Intruder 1

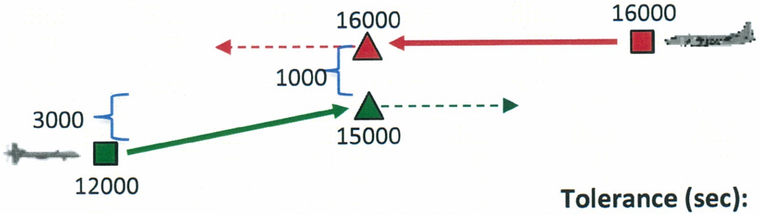


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**150**



Tolerance (sec): ± 10

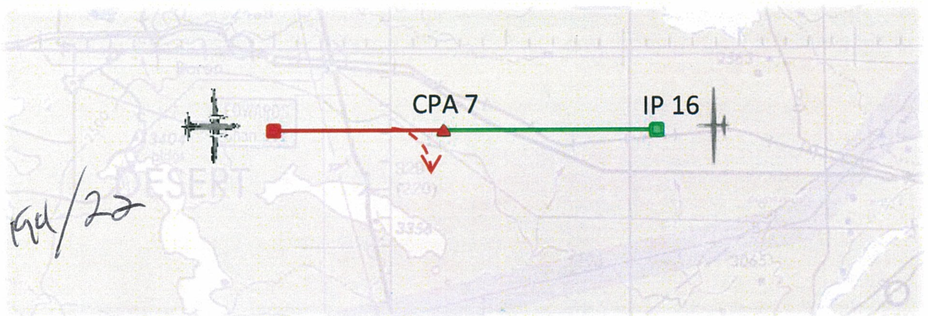
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP72	**N34° 57.05'**	**W117° 26.15'**	16000	7.5	**150**	
	N34° 57' 03.0"	**W117° 26' 09.0"**	0	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	16000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:11	Version 9
Card# 10	**L13A**	Ownship	



Fd/22

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

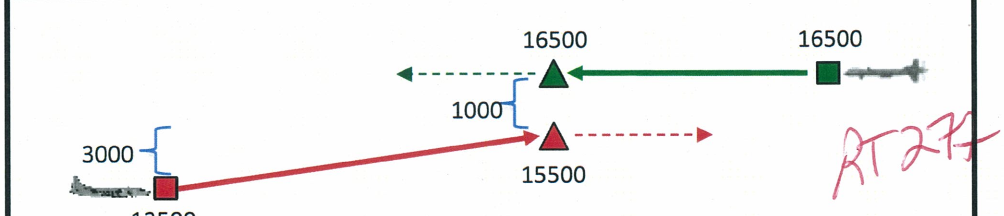
LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ ~~RADAR~~	☑ ~~TCAS~~	☑ ~~TRACKER~~



RT 277

Tolerance (sec): ± 10

COMEX TIME: 0622

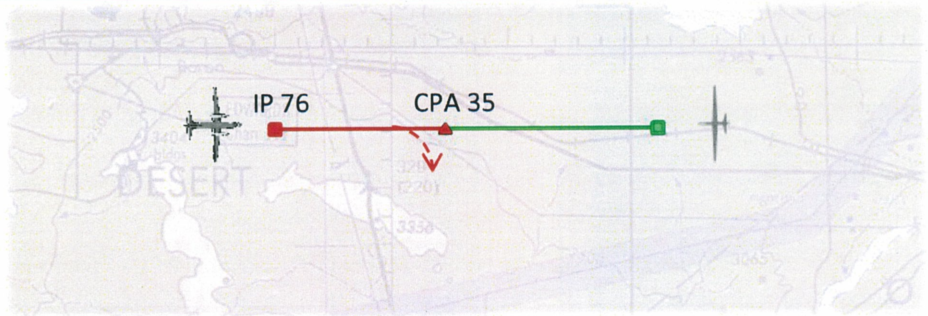
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4''	**W117° 18' 28.2''**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4''	**W117° 27' 37.2''**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT 277 20° off

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:11	Version 9
Card#	**L13A**	Intruder 1	

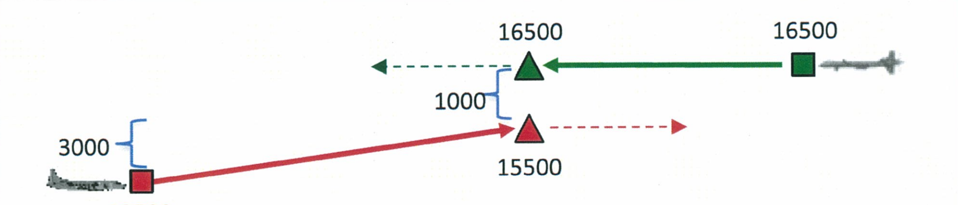


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**



Tolerance (sec): ± 10

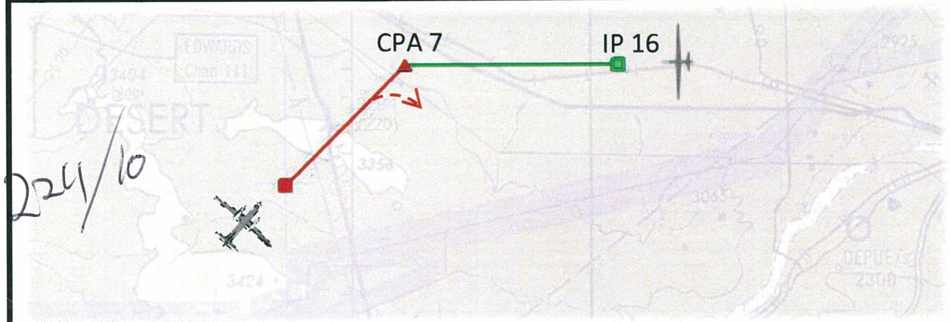
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP76	**N34° 57.09'**	**W117° 38.19'**	12500	8.5	**140**	
	N34° 57' 05.4''	**W117° 38' 11.2''**	1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4''	**W117° 27' 37.2''**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:33	Version 9
Card# 11	**L13C**		Ownship



224/10

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

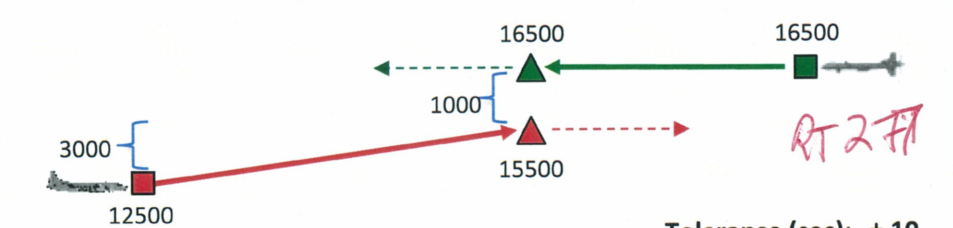
LOST LINK MISSION:

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1
☐ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER



RT 277

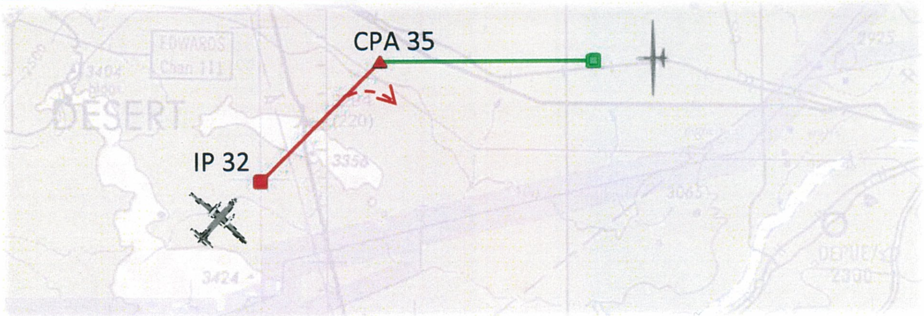
Tolerance (sec): ± 10

COMEX TIME: 0833			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

20° to the Right

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:33	Version 9
Card#	**L13C**		Intruder 1

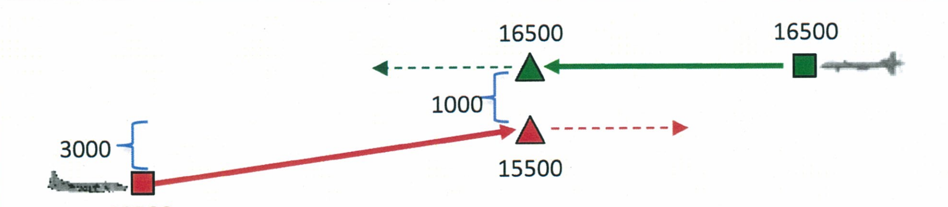


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**

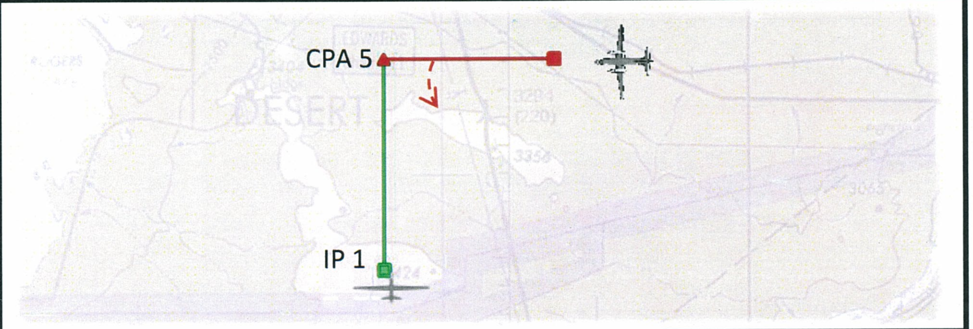


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	12500	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:53	Version 9
Card# 12	**L13D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

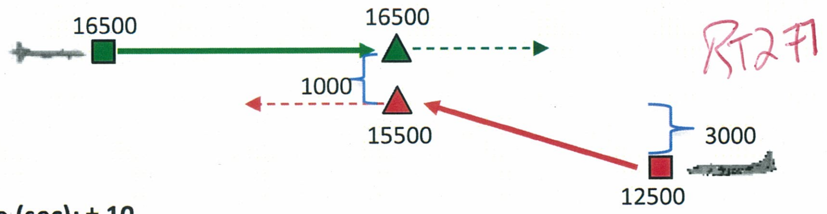
LOST LINK MISSION:

DECONFLICTION ALT: **16500**

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



RT271

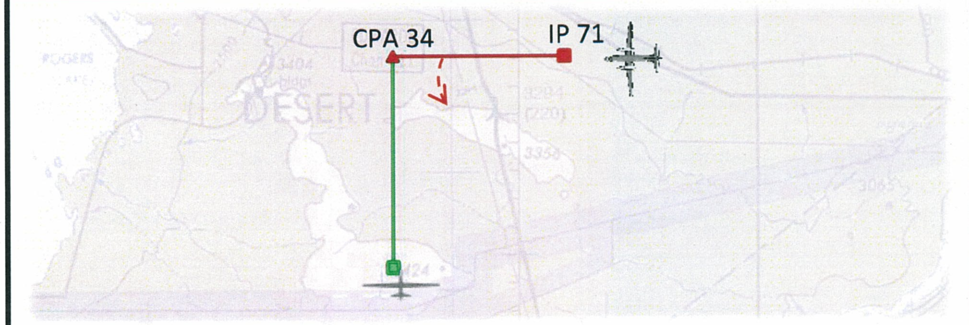
Tolerance (sec): ± 10

COMEX TIME: 0844			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	16500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	16500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT 277 270° Turn Left may have been bett

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:53	Version 9
Card#	**L13D**		Intruder 1

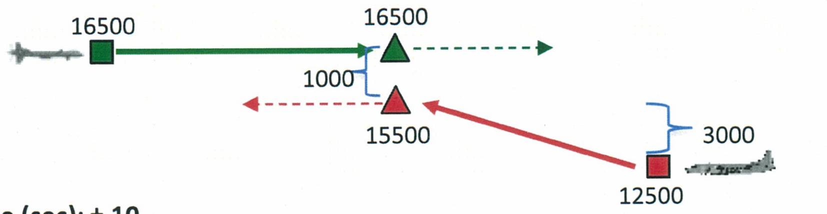


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **15500**

ABORT PROCEDURE

15500	↶ **150**

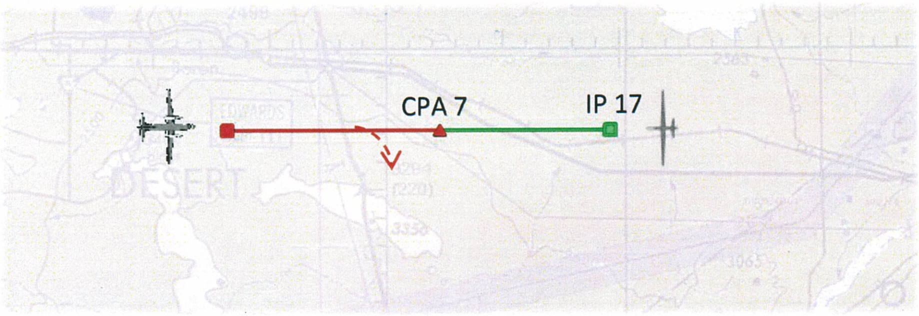


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	12500	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	15500	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:17	Version 9
Card# 13	**L16A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

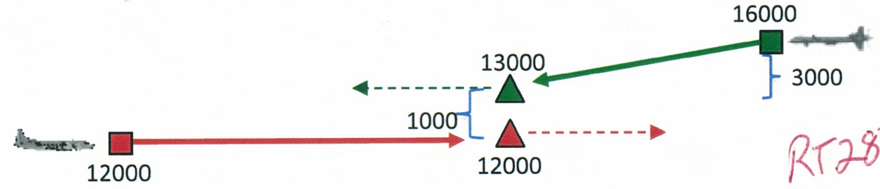
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



RT287

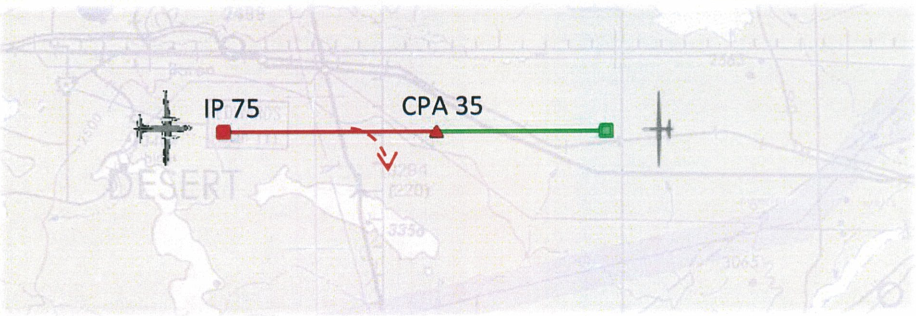
Tolerance (sec): ± 10

COMEX TIME: 0854		IP TIME ADJUST:				
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	16000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Rt 287 Level off

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:17	Version 9
Card#	**L16A**		Intruder 1

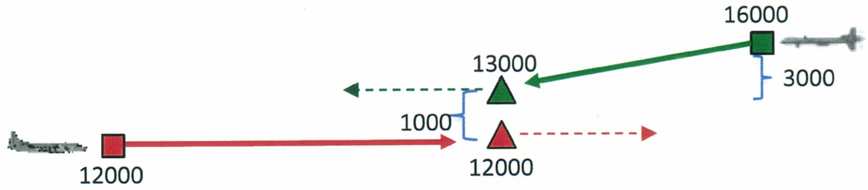


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**

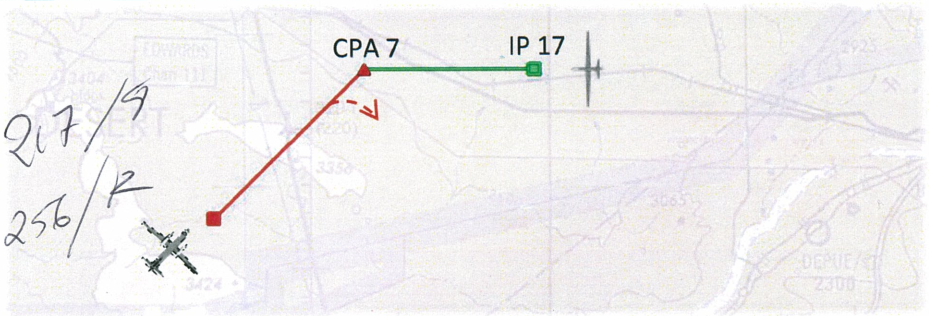


Tolerance (sec): ± 10

COMEX TIME:		IP TIME ADJUST:				
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP75	**N34° 57.09'**	**W117° 36.77'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:39	Version 9
Card# 141	**L16C**		Ownship



217/9
256/R

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

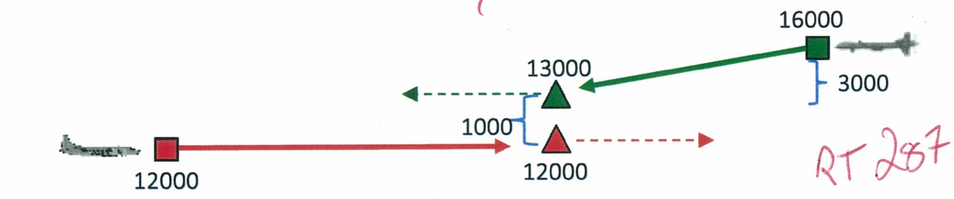
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



RT 287

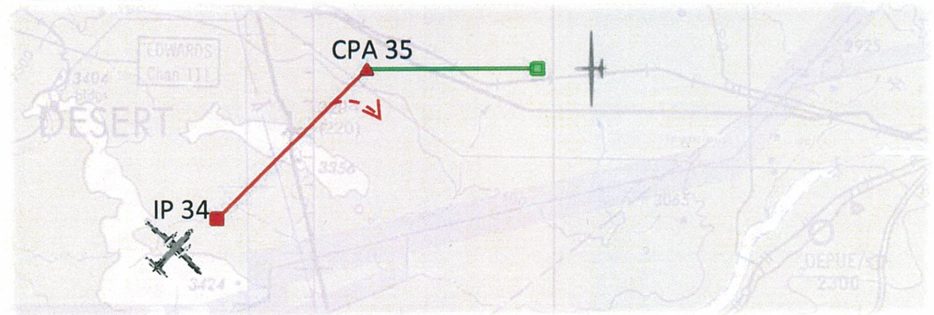
Tolerance (sec): ± 10

COMEX TIME: 0905 0905			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	16000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**120**	0907
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT287 card off 14.6

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:39	Version 9
Card#	**L16C**		Intruder 1

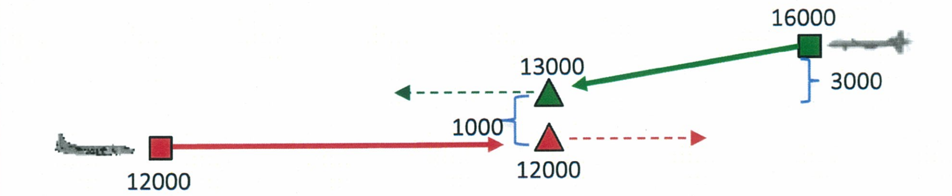


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**

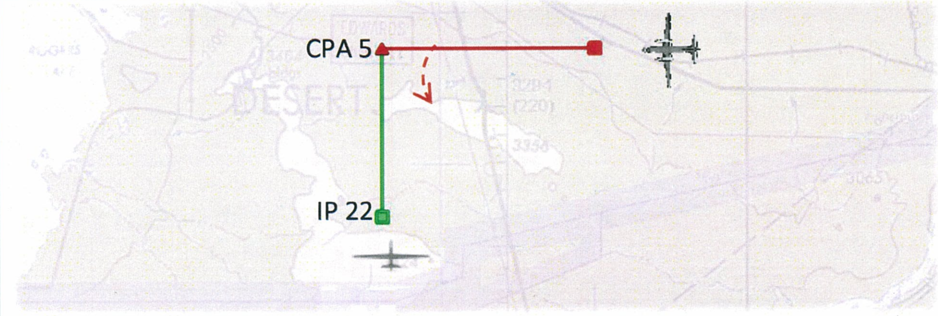


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	**N34° 51.79'**	**W117° 34.09'**	12000	7.5	**150**	
	N34° 51' 47.2"	**W117° 34' 05.4"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:59	Version 9
Card# 15	**L16D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

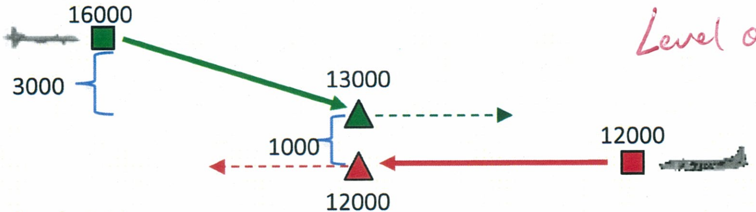
DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ~~☑ RADAR~~ ~~☑ TCAS~~ ~~☑ TRACKER~~

Level off



Tolerance (sec): ± 10

COMEX TIME: ~~0915~~ 0917

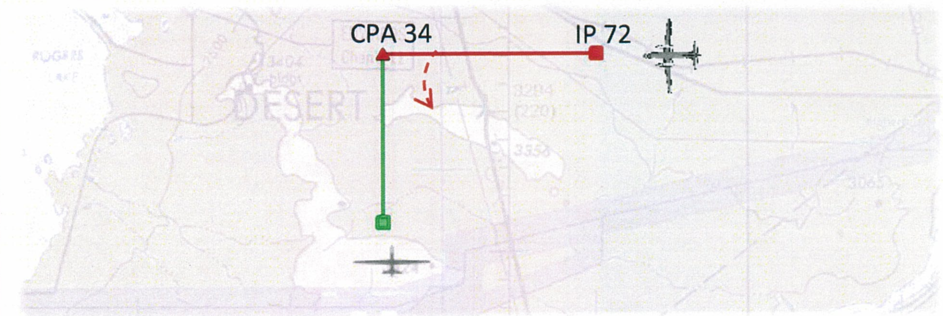
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP22	**N34° 49.71'**	**W117° 35.30'**	16000	7.5	**120**	
	N34° 49' 42.3"	**W117° 35' 18.0"**	-1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**120**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Level off no heading change

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:59	Version 9
Card#	**L16D**		Intruder 1

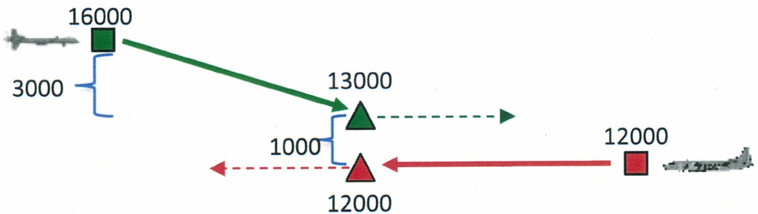


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	← **150**



Tolerance (sec): ± 10

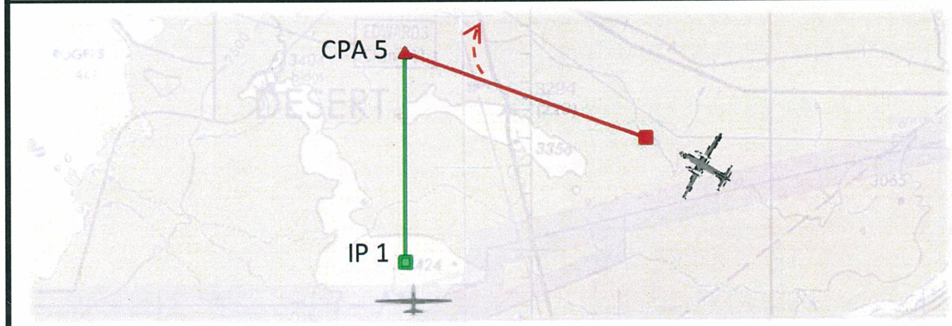
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP72	**N34° 57.05'**	**W117° 26.15'**	12000	7.5	**150**	
	N34° 57' 03.0"	**W117° 26' 09.0"**	0	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:61	Version 9
Card# 16	**L12E**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

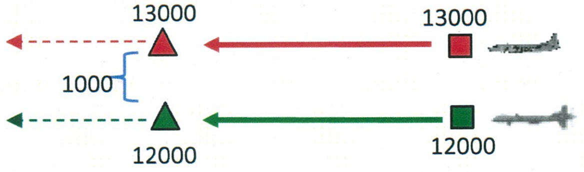
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



U317

Tolerance (sec): ± 10

COMEX TIME: 0928 0824

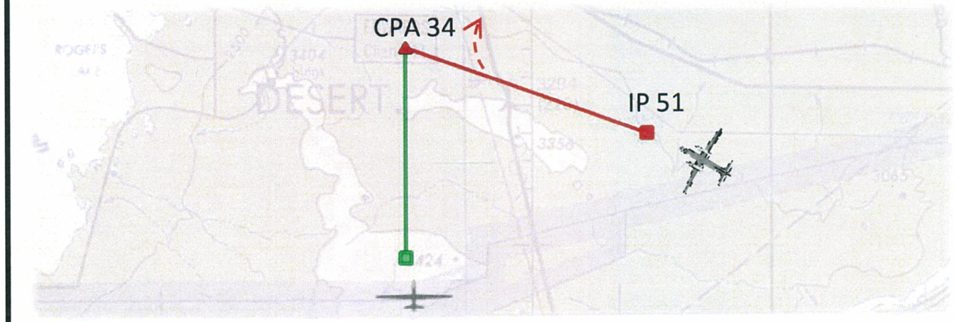
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0''	**W117° 35' 18.0''**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0''	**W117° 35' 18.0''**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Drove Right to CPA // CBDR

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:61	Version 9
Card#	**L12E**		Intruder 1

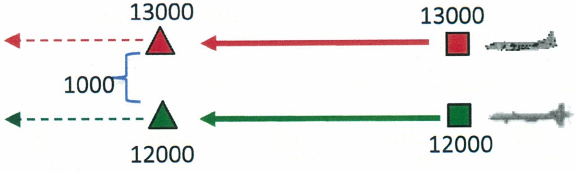


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**030**



Tolerance (sec): ± 10

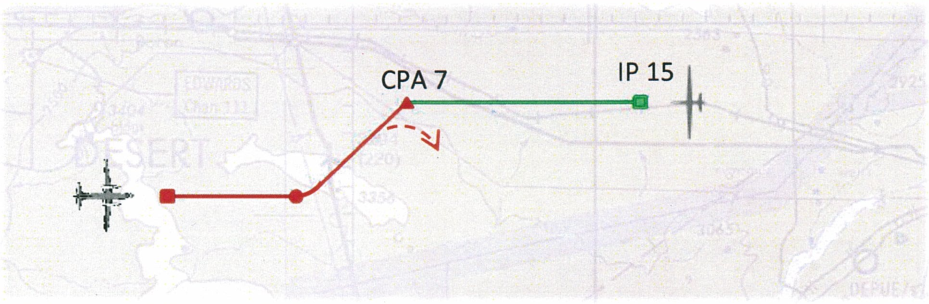
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP51	**N34° 53.97'**	**W117° 24.98'**	13000	9.0	**180**	
	N34° 53' 58.3''	**W117° 24' 58.9''**	0	278		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**180**	
	N34° 57' 03.0''	**W117° 35' 18.0''**	0	278		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:41	Version 9
Card# 17	**L12M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

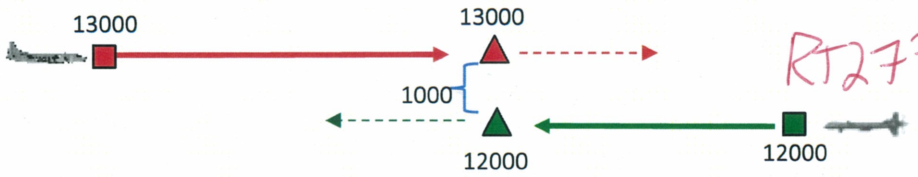
LOST LINK MISSION:

DECONFLICTION ALT: **12000**

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☑ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



RT277

Tolerance (sec): ± 10

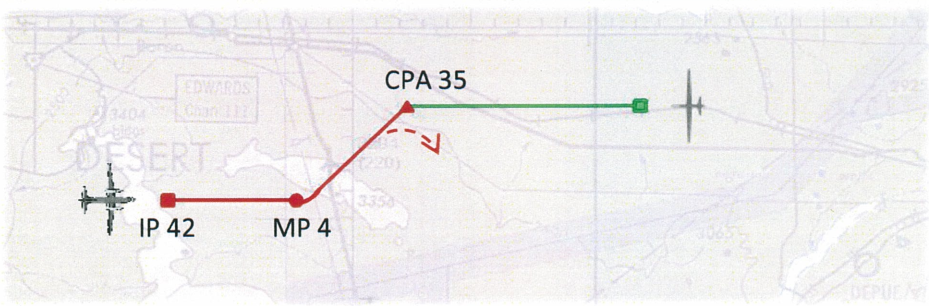
COMEX TIME: 0940 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP15	**N34° 57.09'**	**W117° 17.71'**	12000	8.1	**150**	
	N34° 57' 05.4"	**W117° 17' 42.4"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

Rt 277 20° 3.25

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:41	Version 9
Card#	**L12M**		Intruder 1



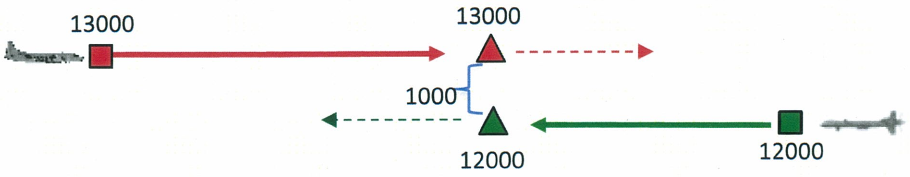
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**120**

NOTE: Expect ownship maneuver

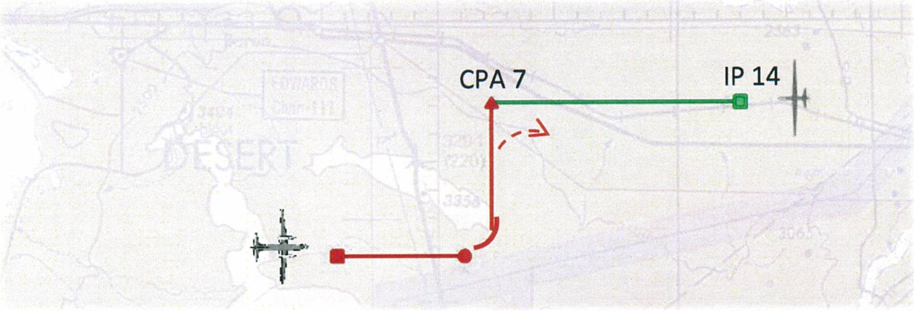


Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP42	**N34° 53.63'**	**W117° 37.81'**	13000	4.5	**180**	
	N34° 53' 37.7"	**W117° 37' 48.7"**	0	078		
MP4	**N34° 53.63'**	**W117° 32.33'**	13000	5.2	**180**	
	N34° 53' 37.7"	**W117° 32' 19.5"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:63	Version 9
Card# 18	**L12N**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

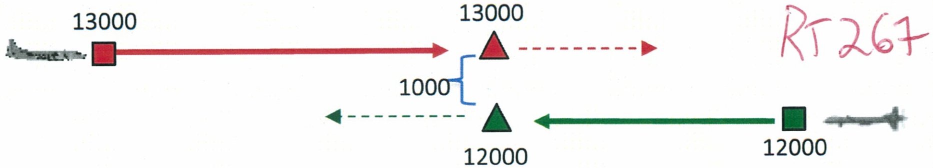
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1
☑ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER



RT267

Tolerance (sec): ± 10

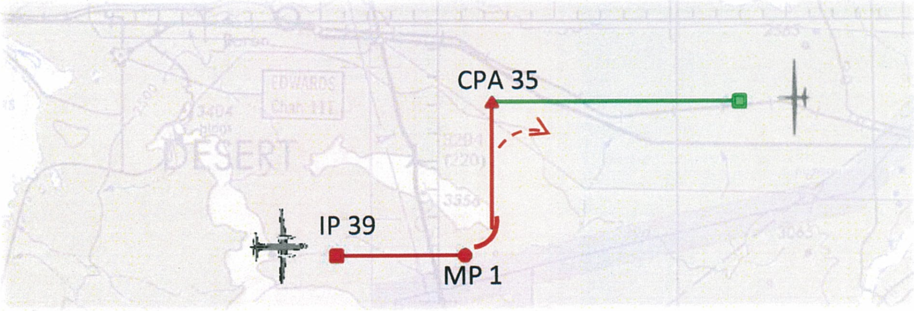
COMEX TIME: 0950			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP14	**N34° 57.09'**	**W117° 16.95'**	12000	8.8	**150**	
	N34° 57' 05.4"	**W117° 16' 56.7"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT created CBDR

3.5 min

FT-3, Configuration 1a	Aircraft: N3GC	S/N:63	Version 9
Card#	**L12N**		Intruder 1

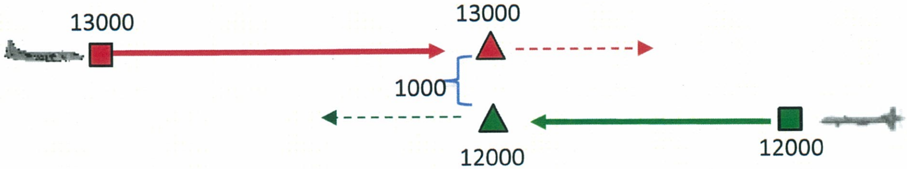


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

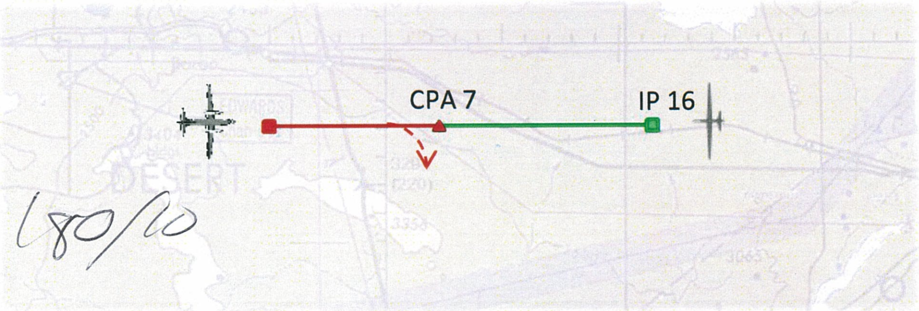
13000	**120**



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP39	**N34° 51.64'**	**W117° 34.27'**	13000	4.5	**180**	
	N34° 51' 38.1"	**W117° 34' 16.1"**	0	078		
MP1	**N34° 51.64'**	**W117° 28.78'**	13000	5.5	**180**	
	N34° 51' 38.1"	**W117° 28' 47.0"**	0	348		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	348		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:13	Version 9
Card# 19	**L14A**		Ownship



180/10

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

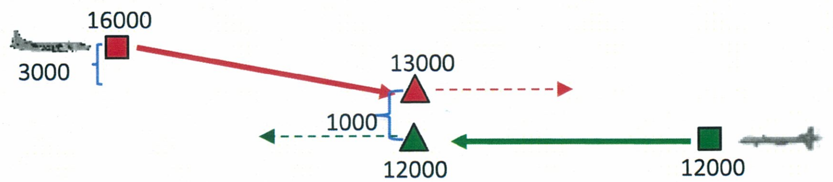
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☑ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 1082

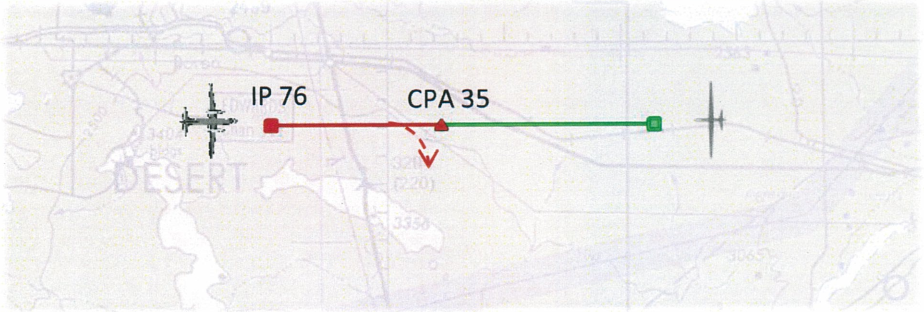
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT 277

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:13	Version 9
Card#	**L14A**		Intruder 1

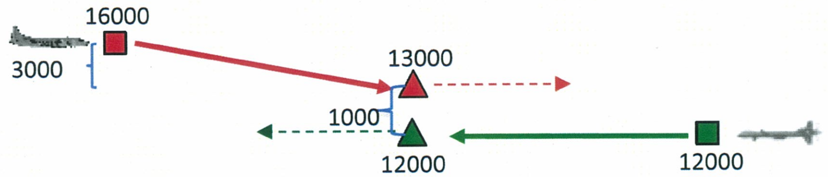


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

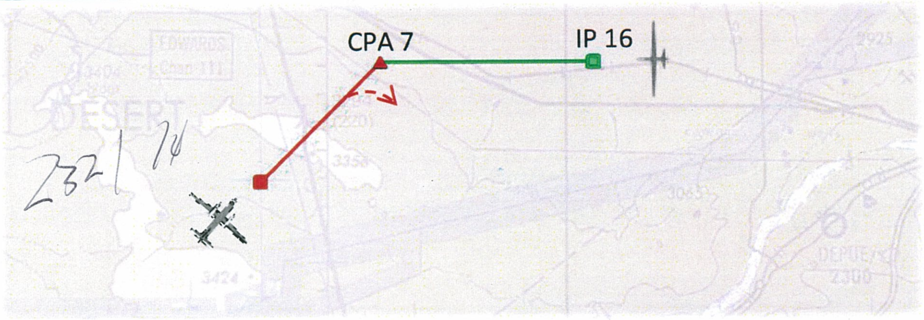
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP76	**N34° 57.09'**	**W117° 38.19'**	16000	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	-1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:35	Version 9
Card# 20	**L14C**		Ownship



232 / 14

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

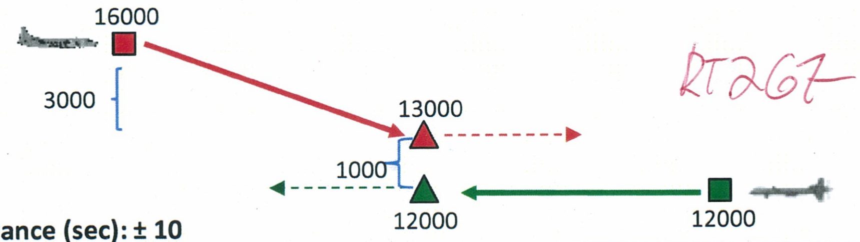
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1
☑ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER



RT267

Tolerance (sec): ± 10

COMEX TIME: 1013

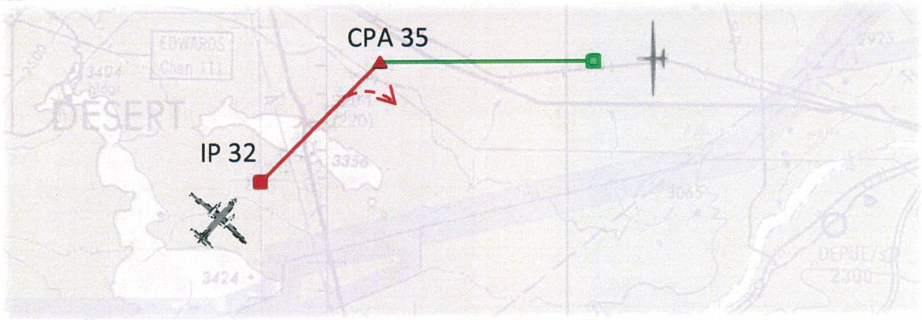
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

IP TIME ADJUST:

NOTE: Ikhana maneuver. Follow Autoresolver guidance

RT

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:35	Version 9
Card#	**L14C**		Intruder 1

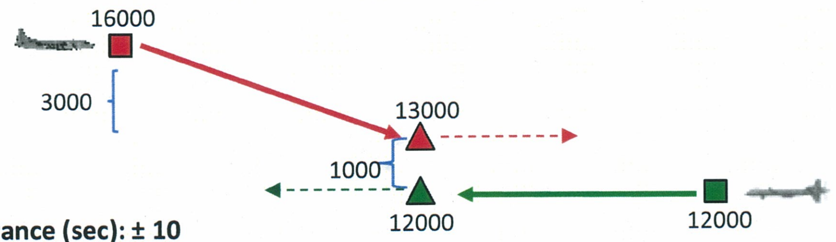


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP32	**N34° 50.97'**	**W117° 35.08'**	16000	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	-1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

IP TIME ADJUST:

NOTE: Expect ownship maneuver

12.4 Flight 4 Redlined Flight Cards

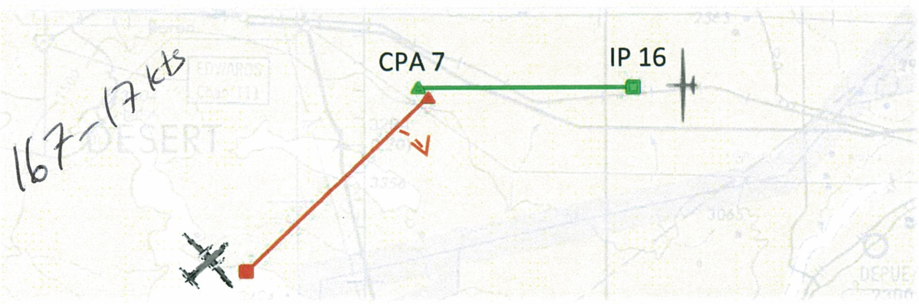
20150622

Order of Cards
Flight 4

Ver 1

Card #	Scenario	Priority	Config	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC	
1	137 - L53C	1	CPDS	Follow TCAS RA - Manually	N3GC	
2	137 - L53C	1		Monitor TCAS RA Auto maneuver	N3GC	
3	146 - L54D	1		Follow TCAS RA - Manually	N3GC	
4	146 - L54D	1		Monitor TCAS RA Auto maneuver	N3GC	
5	140 - L55A	1		Follow TCAS RA - Manually	N3GC	
6	140 - L55A	1		Monitor TCAS RA Auto maneuver	N3GC	
7	151 - L56F	1		Follow TCAS RA - Manually	N3GC	
8	151 - L56F	1		Monitor TCAS RA Auto maneuver	N3GC	
9	115 - L32G (110)	1	RADAR / CPDS	Ikhana fly through / Non-maneuver	N3GC	
10	121 - L32G (90)	1			N3GC	
11	117 - L53G (110)	1			N3GC	
12	124 - L55G (90)	1			N3GC	
[redacted]	[redacted]	1	CPDS	Follow TCAS RA - Manually	N3GC	
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	
15	128 - L32A	1		Follow TCAS RA - Manually	N3GC	
16	128 - L32A	1		Monitor TCAS RA Auto maneuver	N3GC	
17	129 - L32C	1		Follow TCAS RA - Manually	N3GC	
18	129 - L32C	1		Monitor TCAS RA Auto maneuver	N3GC	
[redacted]	[redacted]	1		Follow TCAS RA - Manually	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Follow TCAS RA - Manually	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Follow TCAS RA - Manually	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Follow TCAS RA - Manually	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Follow TCAS RA - Manually	N3GC	AFRC - T-34
[redacted]	[redacted]	1		Monitor TCAS RA Auto maneuver	N3GC	AFRC - T-34

FT-3, Configuration 1	Aircraft: NASA 870	S/N:137	Version 9
Card# 1	**L53C**		Ownship



167-17 kts

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

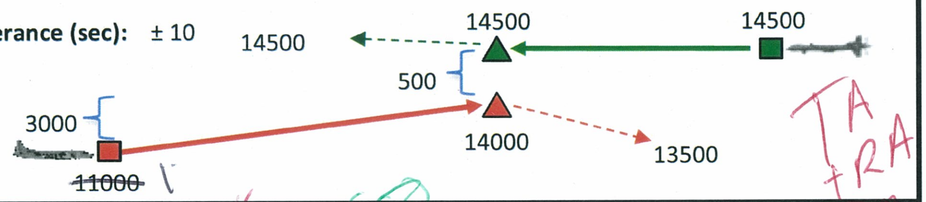
DECONFLICTION ALT:
14500

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER

Tolerance (sec): ± 10

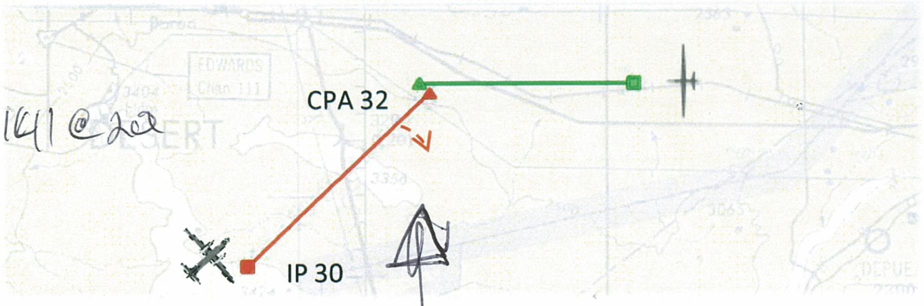


TA + RA Both

COMEX TIME: 0640 // 0650			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	14500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:137	Version 9
Card#	**L53C**		Intruder 1



141 @ 202

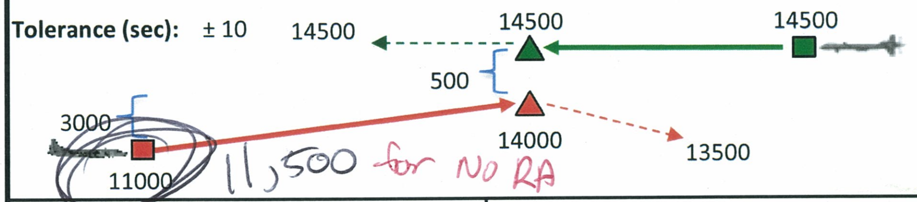
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13500

ABORT PROCEDURE

13500	**120**

Tolerance (sec): ± 10

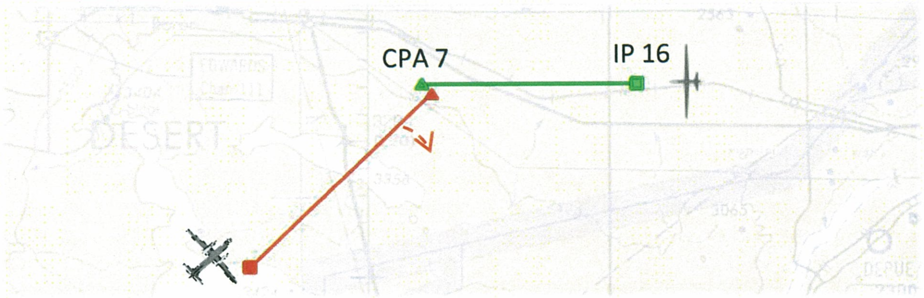


11,500 for NO RA

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	11000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:137	Version 9
Card# 2	**L53C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

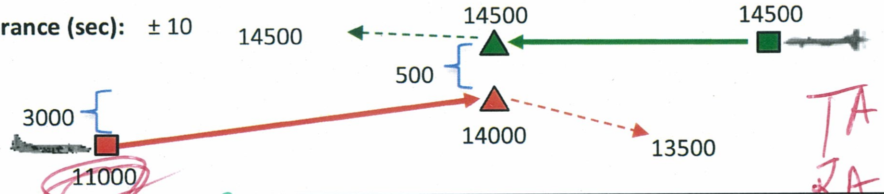
DECONFLICTION ALT:
14500

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☐ Advisory ☑ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER

Tolerance (sec): ± 10



TA
RA B

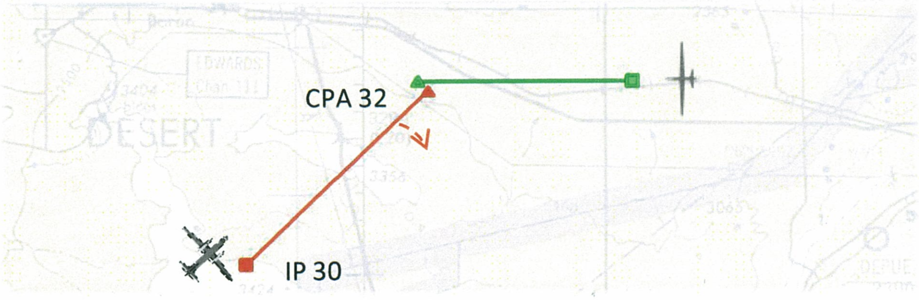
COMEX TIME: 0708

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	14500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:137	Version 9
Card#	**L53C**		Intruder 1



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

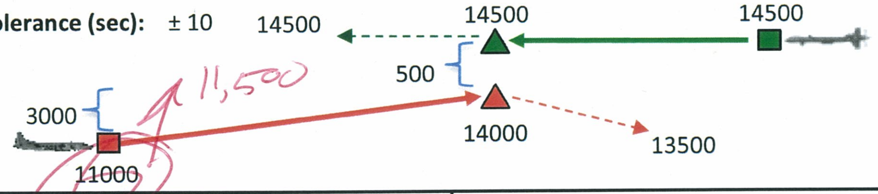
DECONFLICTION ALT:
13500

ABORT PROCEDURE

13500	**120**

DR-noted RA

Tolerance (sec): ± 10



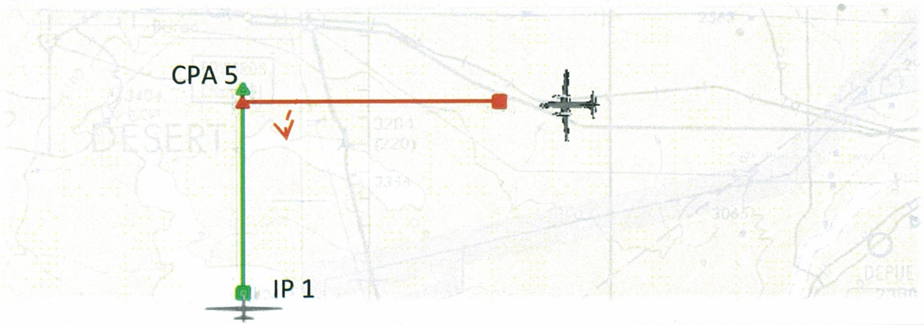
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	11000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:146	Version 9
Card# 3	**L54D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

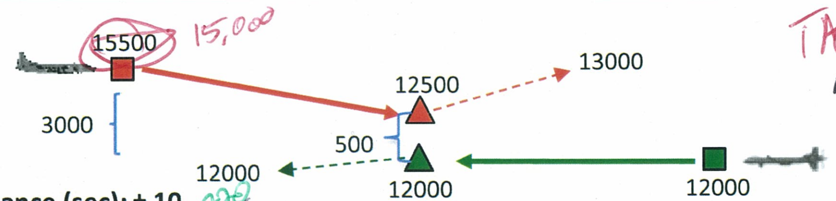
LOST LINK MISSION:

DECONFLICTION ALT:
12000

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



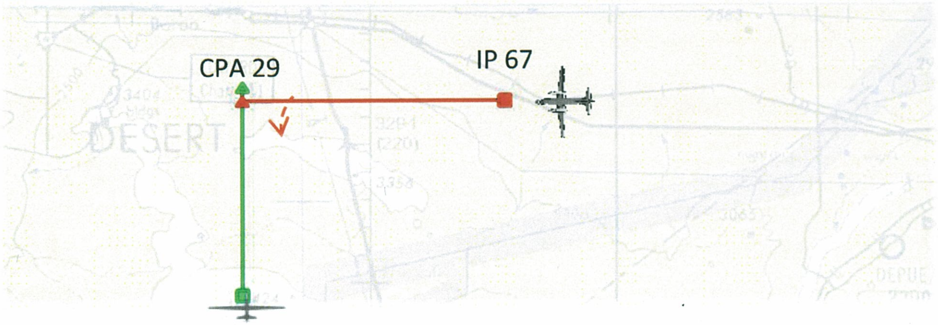
TA B
no RA

Tolerance (sec): ± 10

COMEX TIME: 0712 0720 // 0730			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:146	Version 9
Card#	**L54D**		Intruder 1

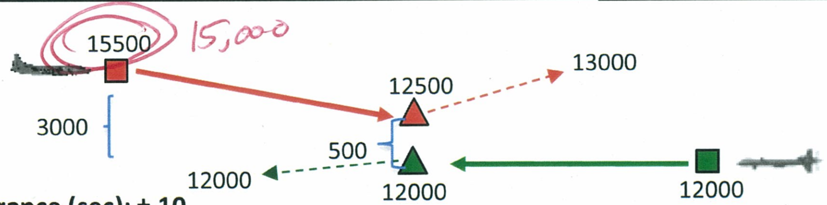


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**

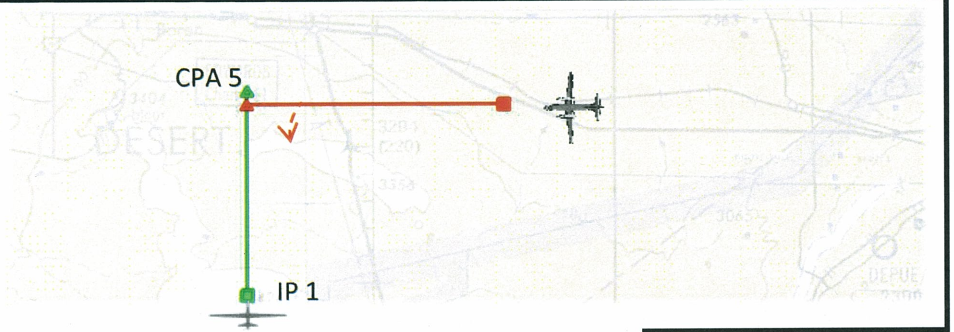


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	15500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:146	Version 9
Card# 4	**L54D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

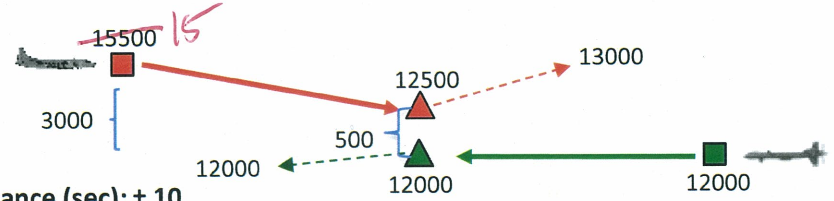
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☐ Advisory	☑ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
☐ TRACKER			



Tolerance (sec): ± 10

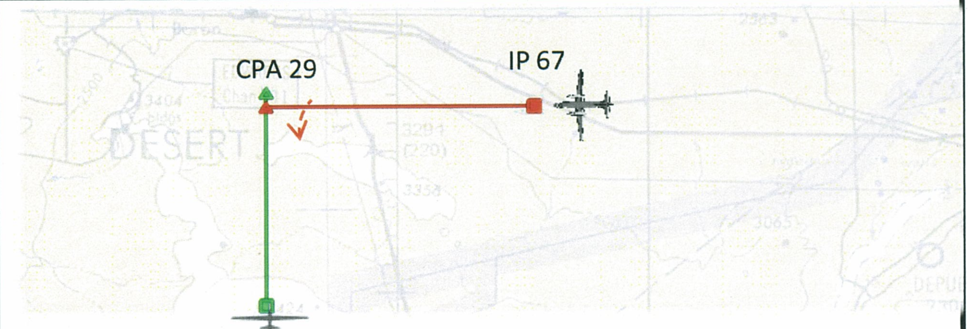
COMEX TIME: 0741

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:146	Version 9
Card#	**L54D**		Intruder 1

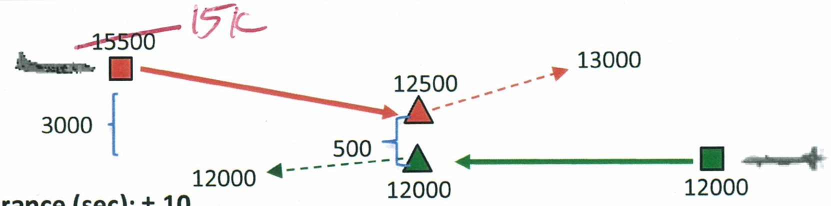


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

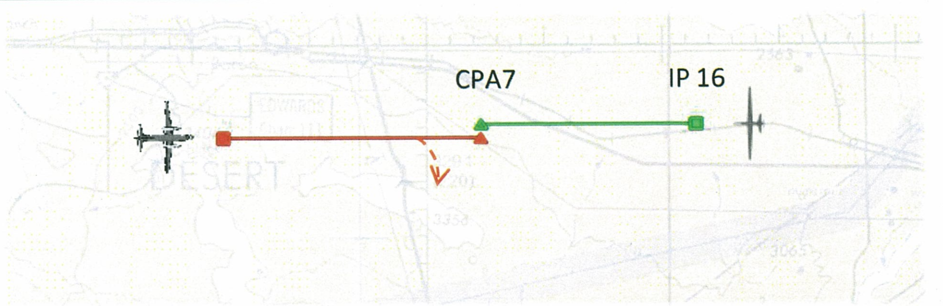
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	15500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:140	Version 9
Card# 5	**L55A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

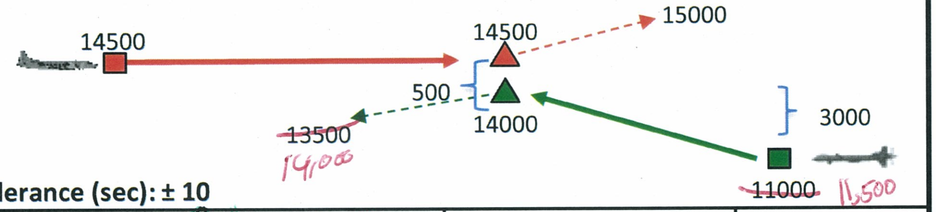
LOST LINK MISSION:

DECONFLICTION ALT: 13500

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER

ABORT PROCEDURE

~~13500~~ 14,000	MAINTAIN HDG

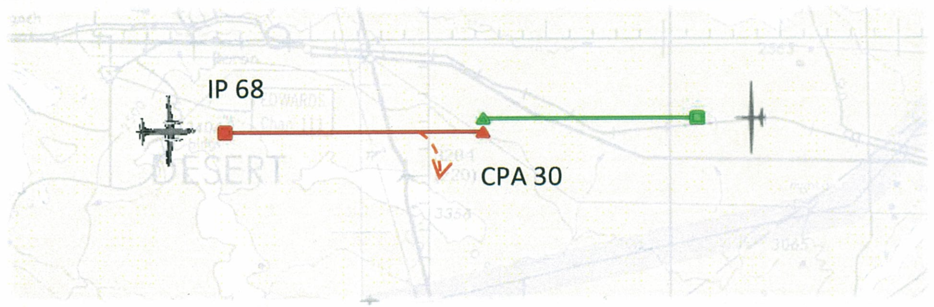


Tolerance (sec): ± 10

COMEX TIME: 0453 || 0504			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	11000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	1000	258		
CPA7	N34° 57.09'	W117° 27.62'	14000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:140	Version 9
Card#	**L55A**		Intruder 1

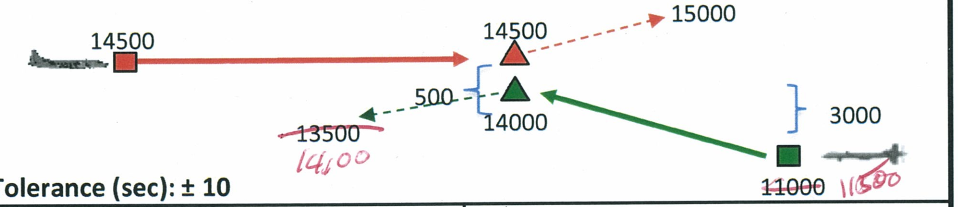


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 14500

ABORT PROCEDURE

15000	120

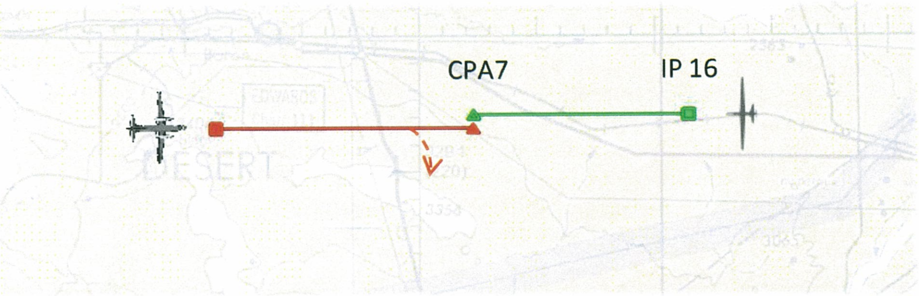


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	N34° 56.60'	W117° 38.60'	14500	9.0	180	
	N34° 56' 35.8"	W117° 38' 36.0"	0	078		
CPA30	N34° 56.60'	W117° 27.62'	14500	0.0	180	
	N34° 56' 35.8"	W117° 27' 37.2"	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:140	Version 9
Card# 6	L55A		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

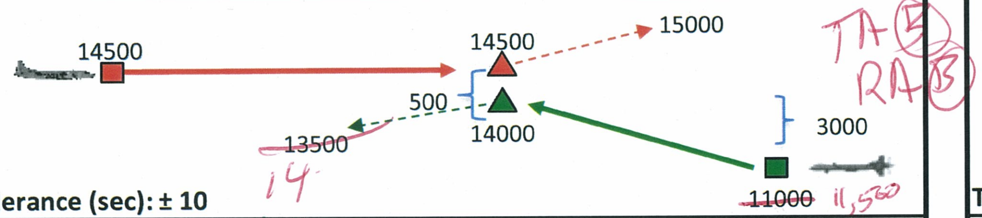
LOST LINK MISSION:

DECONFLICTION ALT:
13500

ABORT PROCEDURE

~~13500~~ 14,000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☐ Advisory ☑ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER



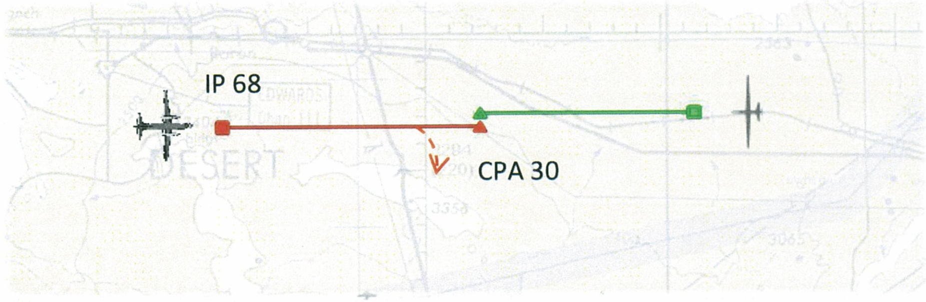
Tolerance (sec): ± 10

COMEX TIME: 0813 0813

			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	11000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:140	Version 9
Card#	L55A		Intruder 1

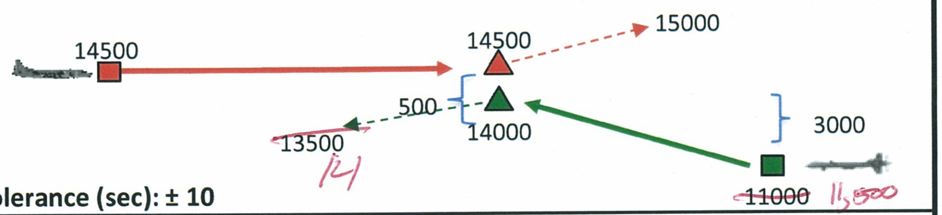


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14500

ABORT PROCEDURE

15000	120



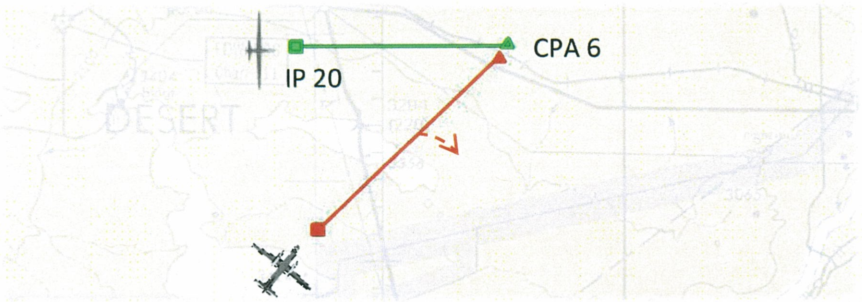
Tolerance (sec): ± 10

COMEX TIME:

			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	14500	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	14500	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:151	Version 9
Card# 7	**L56F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

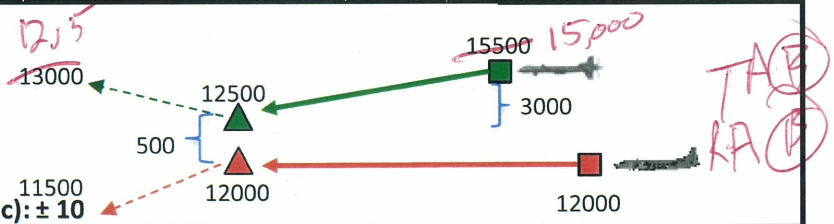
LOST LINK MISSION:

DECONFLICTION ALT: 13000

ABORT PROCEDURE

12,500 ~~13000~~	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER

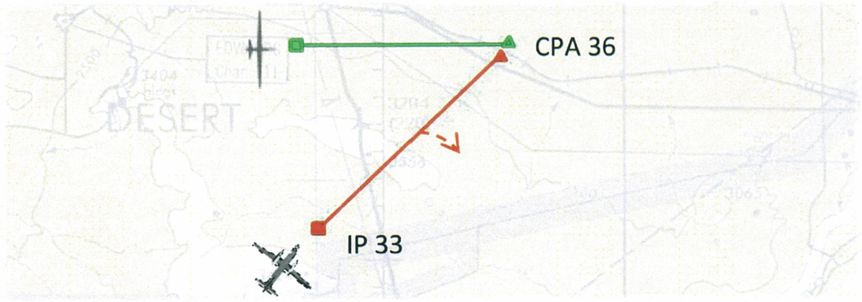


Tolerance (sec): ± 10

COMEX TIME: 0823			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	N34° 57.89'	W117° 33.62'	15500	7.5	150	
	N34° 57' 53.4"	W117° 33' 37.3"	-1000	078		
CPA6	N34° 57.89'	W117° 24.47'	12500	0.0	150	
	N34° 57' 53.4"	W117° 24' 28.2"	0	078		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:151	Version 9
Card#	**L56F**		Intruder 1

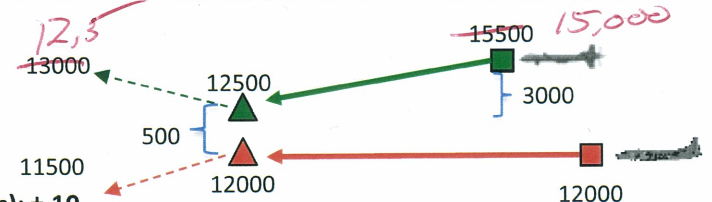


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 12000

ABORT PROCEDURE

11500	120

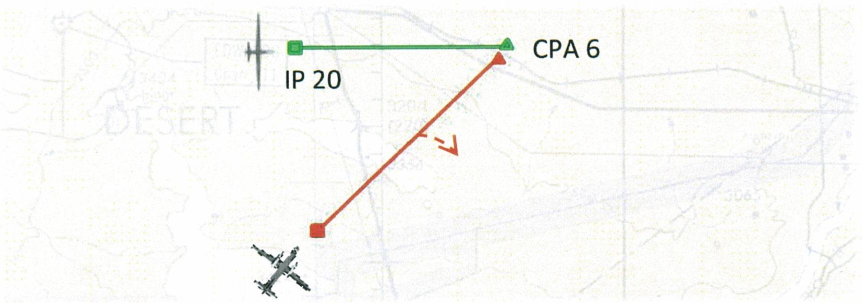


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	N34° 51.18'	W117° 32.66'	12000	9.0	180	
	N34° 51' 10.6"	W117° 32' 39.7"	0	033		
CPA36	N34° 57.54'	W117° 24.90'	12000	0.0	180	
	N34° 57' 32.5"	W117° 24' 53.8"	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:151	Version 9
Card# 8	**L56F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

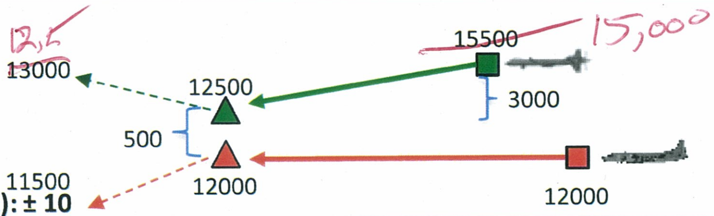
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

12,5 ~~13000~~	MAINTAIN HDG

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☐ Advisory	☑ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER



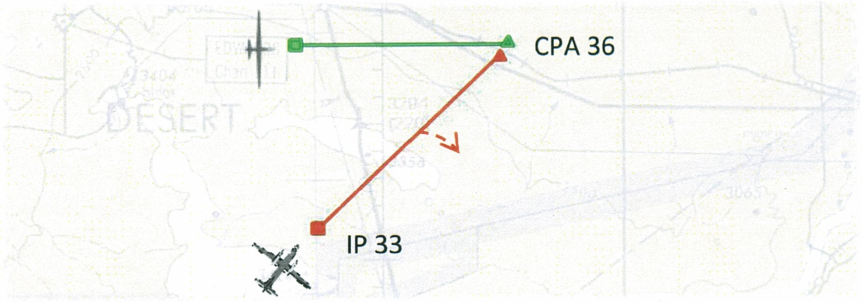
Tolerance (sec): ± 10

COMEX TIME: 0633
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	15500	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	-1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12500	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:151	Version 9
Card#	**L56F**		Intruder 1

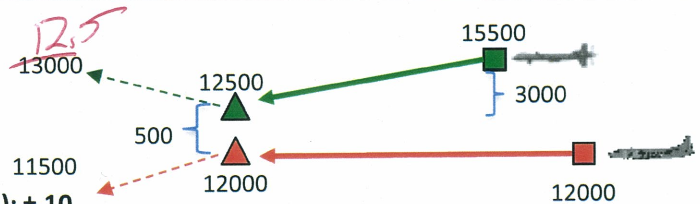


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11500	**120**



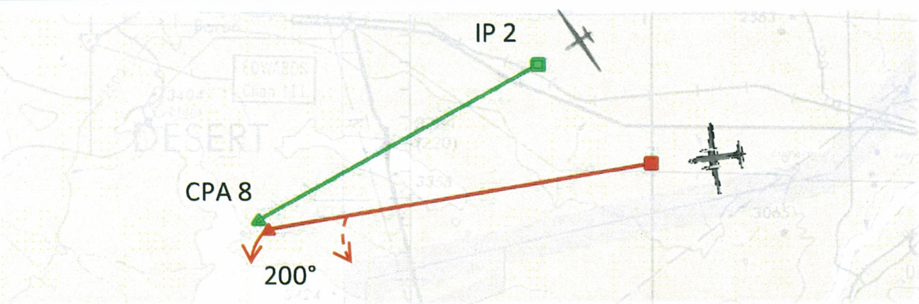
Tolerance (sec): ± 10

COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	12000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12000	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:115	Version 9
Card#9	**L32G**	Ownship	



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER

TA 3
RA B
FOR m?n+not

Tolerance (sec): ± 10

COMEX TIME: 0541 | 0909 0909
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP2	**N34° 57.89'**	**W117° 24.47'**	12000	12.5	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	228		
CPA8	**N34° 52.24'**	**W117° 36.42'**	12000	0.0	**150**	
	N34° 52' 14.1"	**W117° 36' 25.3"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1	Aircraft: N3GC	S/N:115	Version 9
Card#	**L32G**	Intruder 1	

192/12
176/18

LEFT 200, CLIMB

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**180**

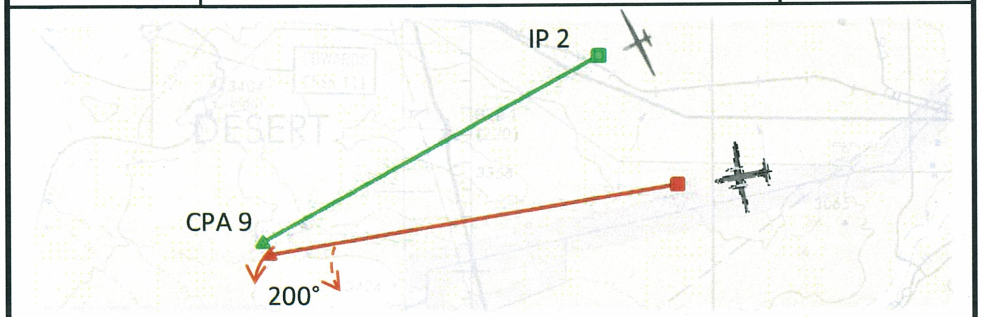
Tolerance (sec): ± 10

COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP59	**N34° 54.25'**	**W117° 19.68'**	12300	13.6	**180**	
	N34° 54' 14.7"	**W117° 19' 40.6"**	0	248		
CPA11	**N34° 51.89'**	**W117° 35.97'**	12300	0.0	**180**	
	N34° 51' 53.3"	**W117° 35' 58.4"**	0	248		

NOTE: 5 min legs, 110° BEARING TO OWNSHIP, Turn Left heading 200 at CPA to maintain 0.5nm separation. Climb.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:121	Version 9
Card# 18	**L32G**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER

TA
RA (B)

Tolerance (sec): ± 10

COMEX TIME: 0655			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	N34° 57.89'	W117° 24.47'	12000	15.0	150	
	N34° 57' 53.4"	W117° 24' 28.2"	0	228		
CPA9	N34° 51.11'	W117° 38.81'	12000	0.0	150	
	N34° 51' 06.3"	W117° 38' 48.7"	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1	Aircraft: N3GC	S/N:121	Version 9
Card#	**L32G**		Intruder 1

LEFT 200, CLIMB

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

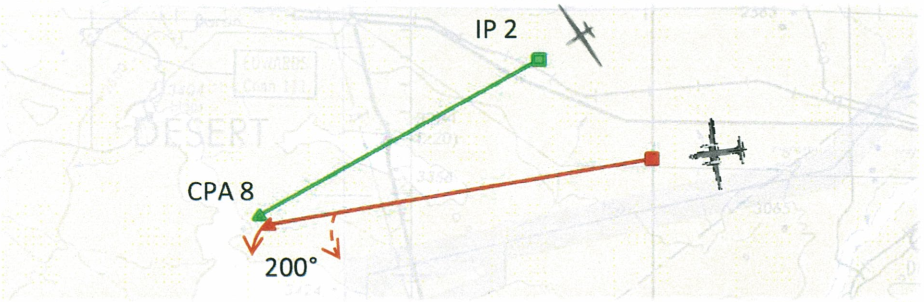
13000	**180**

Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP43	N34° 53.17'	W117° 21.12'	12300	14.5	160	
	N34° 53' 10.1"	W117° 21' 07.4"	0	248		
CPA10	N34° 50.66'	W117° 38.50'	12300	0.0	160	
	N34° 50' 39.3"	W117° 38' 30.2"	0	248		

NOTE: 6 min legs, 90° BEARING TO OWNSHIP, Turn Left heading 200 at CPA to maintain 0.5nm separation. Climb.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:117	Version 9
Card# 11	**L53G**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

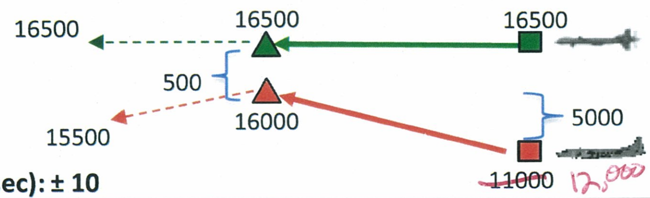
LOST LINK MISSION:

DECONFLICTION ALT: **16500**

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



TA-B
RA-3GC

Tolerance (sec): ± 10

COMEX TIME: 0923 0923 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP2	**N34° 57.89'**	**W117° 24.47'**	16500	12.5	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	228		
CPA8	**N34° 52.24'**	**W117° 36.42'**	16500	0.0	**150**	
	N34° 52' 14.1"	**W117° 36' 25.3"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1	Aircraft: N3GC	S/N:117	Version 9
Card#	**L53G**		Intruder 1

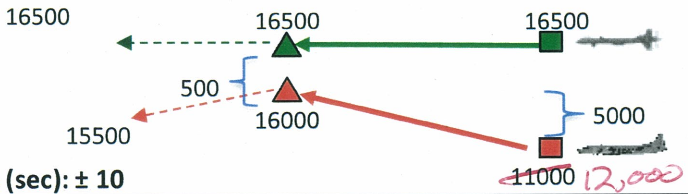
LEFT 200, DESCEND

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **15500**

ABORT PROCEDURE

15500	**180**



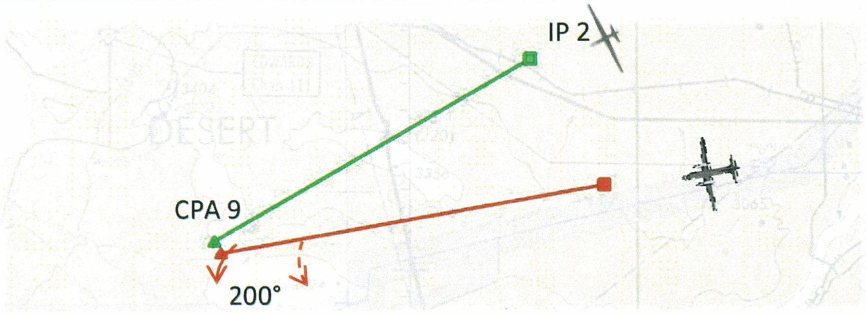
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP59	**N34° 54.25'**	**W117° 19.68'**	11000	13.6	**180**	
	N34° 54' 14.7"	**W117° 19' 40.6"**	1000	248		
CPA11	**N34° 51.89'**	**W117° 35.97'**	16000	0.0	**180**	
	N34° 51' 53.3"	**W117° 35' 58.4"**	0	248		

NOTE: 5 min legs, 110° BEARING TO OWNSHIP, Turn Left heading 200 at CPA to maintain 0.5nm separation. Descend.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:124	Version 9
Card# R	**L55G**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

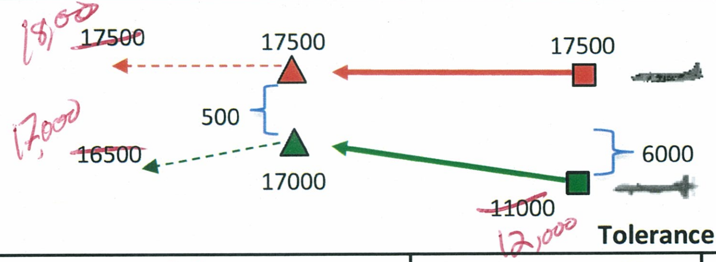
LOST LINK MISSION:

DECONFLICTION ALT:
16500

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER

ABORT PROCEDURE

17,00 ~~16500~~	MAINTAIN HDG

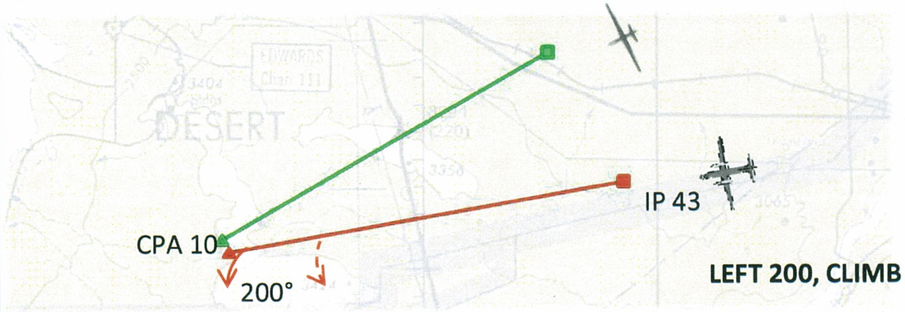


Tolerance (sec): ± 10

COMEX TIME: 0936			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	**N34° 57.89'**	**W117° 24.47'**	11000	15.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	1000	228		
CPA9	**N34° 51.11'**	**W117° 38.81'**	17000	0.0	**150**	
	N34° 51' 06.3"	**W117° 38' 48.7"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:124	Version 9
Card#	**L55G**		Intruder 1



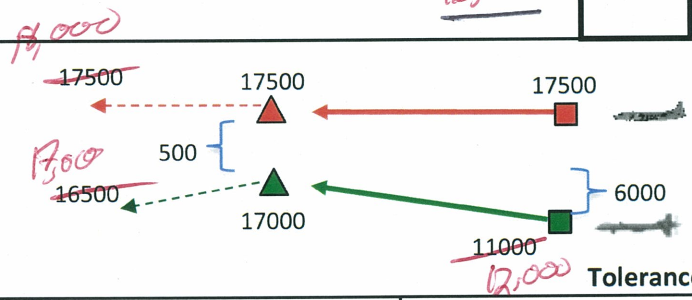
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
17500

ABORT PROCEDURE

18,000

~~17500~~	<- 180



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP43	**N34° 53.17'**	**W117° 21.12'**	17500	14.5	**160**	
	N34° 53' 10.1"	**W117° 21' 07.4"**	0	248		
CPA10	**N34° 50.66'**	**W117° 38.50'**	17500	0.0	**160**	
	N34° 50' 39.3"	**W117° 38' 30.2"**	0	248		

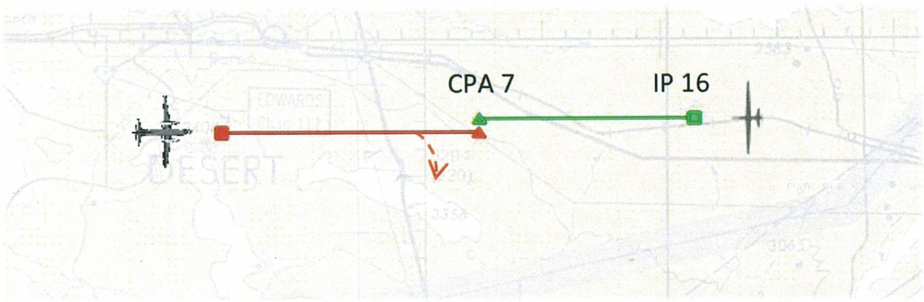
NOTE: 6 min legs, 90° BEARING TO OWNSHIP, Turn Left heading 200 at CPA to maintain 0.5nm separation. Climb.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:128	Version 9

Card# 5

L32A

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

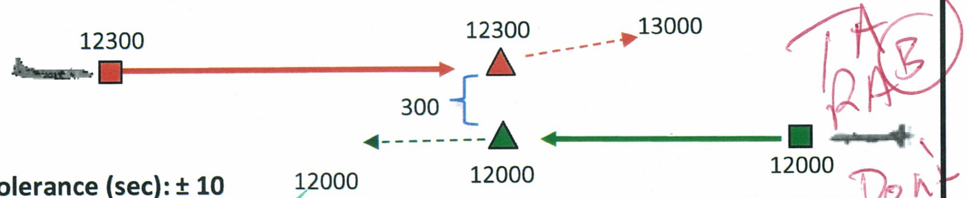
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER



TA
RA (B)
Don't Climb
Vert Climb

Tolerance (sec): ± 10

COMEX TIME: 0955			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

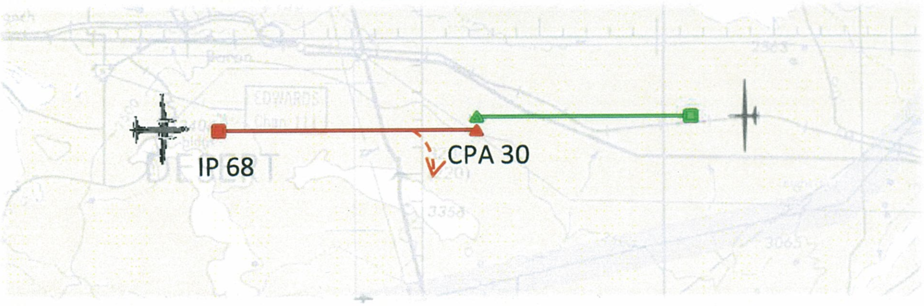
NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:128	Version 9

Card#

L32A

Intruder 1

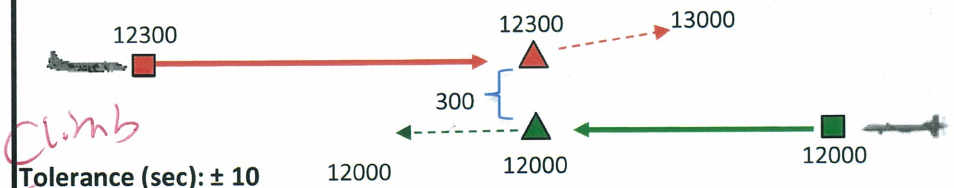


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

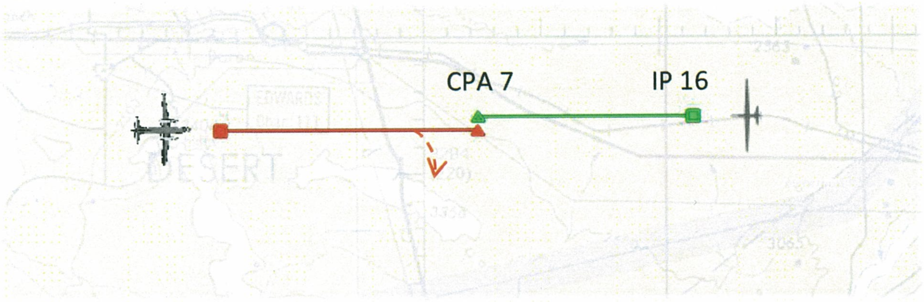


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	12300	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12300	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N:128	Version 9
Card# 16	**L32A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

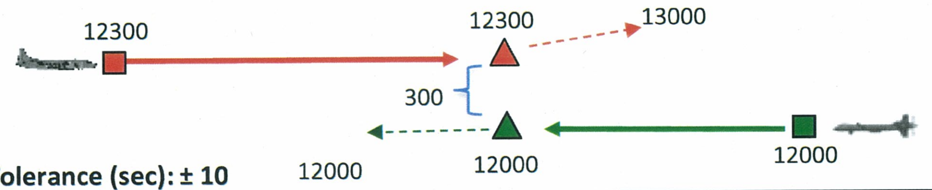
LOST LINK MISSION:
)

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☐ Advisory	☑ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER

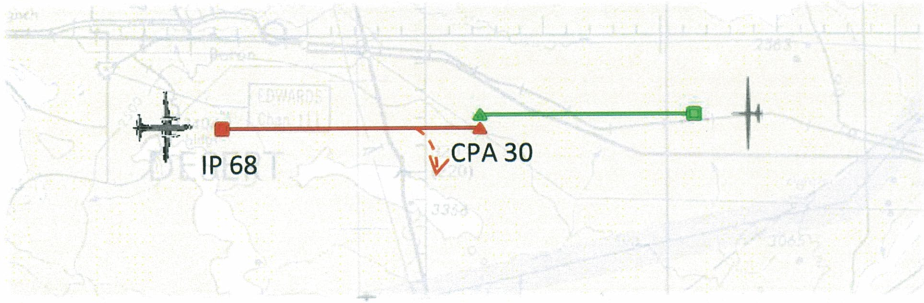


Tolerance (sec): ± 10

COMEX TIME: 1005			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1	Aircraft: N3GC	S/N:128	Version 9
Card#	**L32A**		Intruder 1

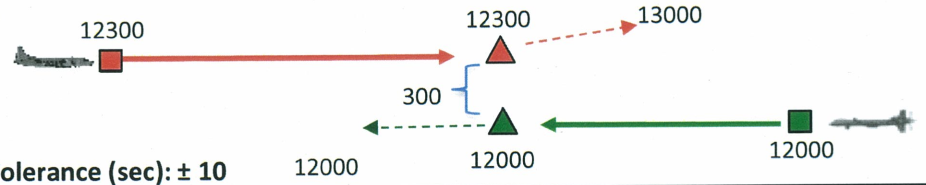


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	12300	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12300	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

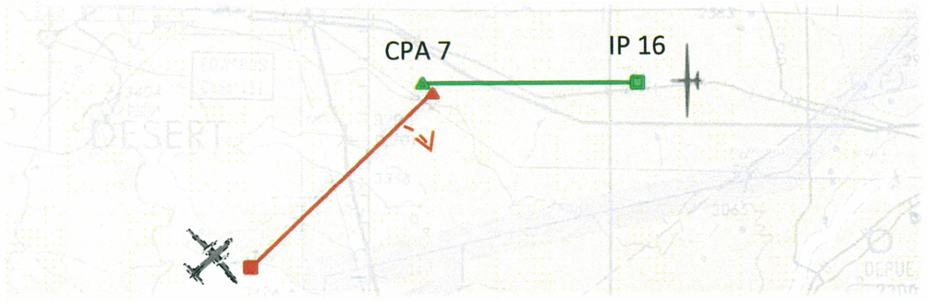
NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1 | Aircraft: NASA 870 | S/N:129 | Version 9

Card# 17

L32C

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

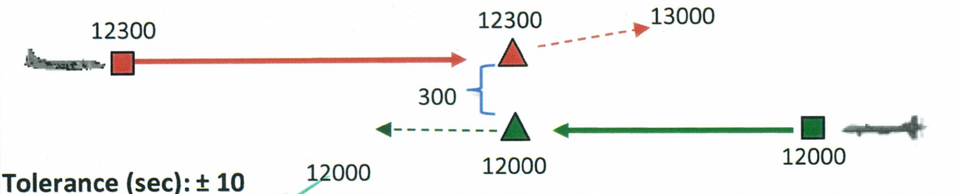
LOST LINK MISSION:

DECONFLICTION ALT: **12000**

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 1015

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

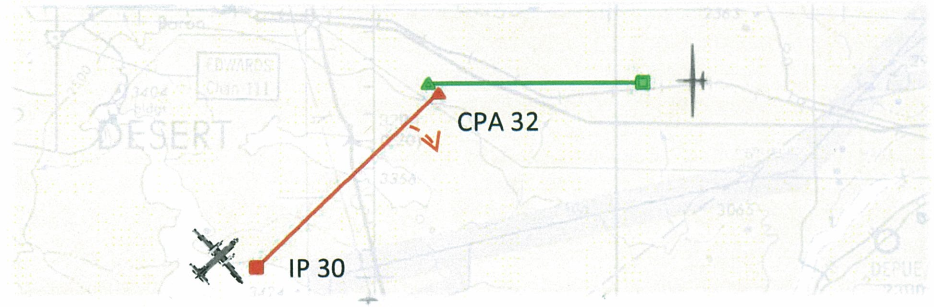
NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1 | Aircraft: N3GC | S/N:129 | Version 9

Card#

L32C

Intruder 1

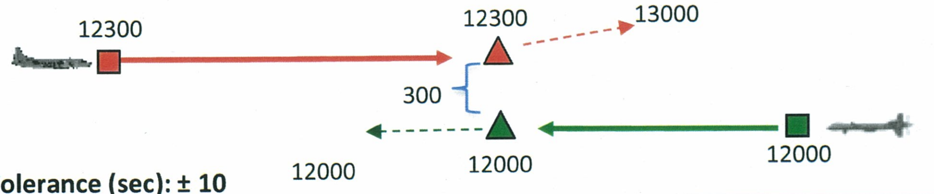


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	12300	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12300	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

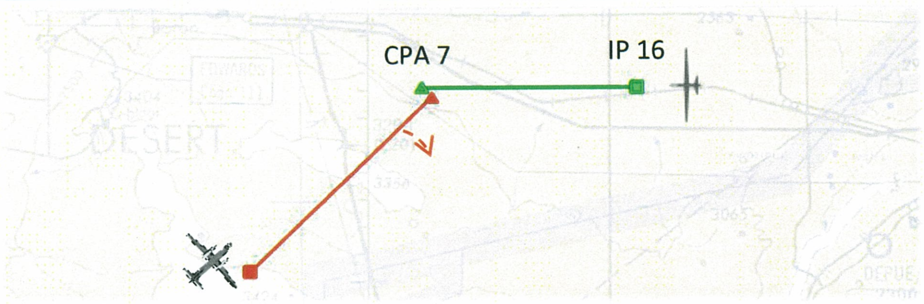
NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1 | Aircraft: NASA 870 | S/N:129 | Version 9

Card# 18

L32C

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

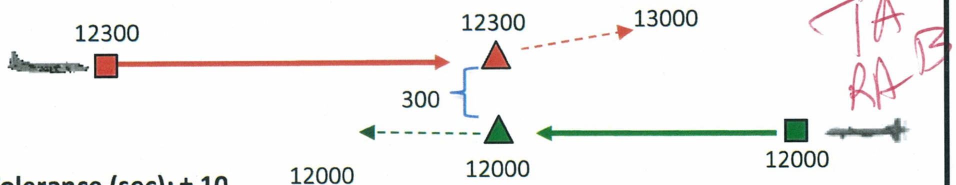
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1
☐ OFF
☑ ADS-B
☐ AR 2
☐ Stratway+
☐ Advisory
☑ RADAR
☑ CPDS
☑ AUTO
☑ TCAS
☐ TRACKER



TA
RA B

Tolerance (sec): ± 10

COMEX TIME: 1025

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

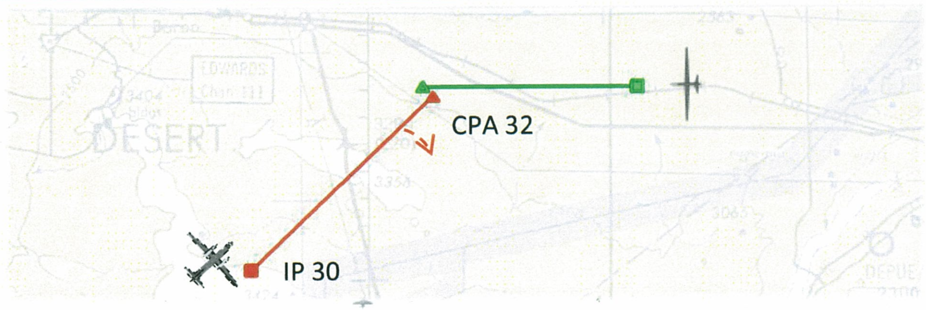
NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1 | Aircraft: N3GC | S/N:129 | Version 9

Card#

L32C

Intruder 1

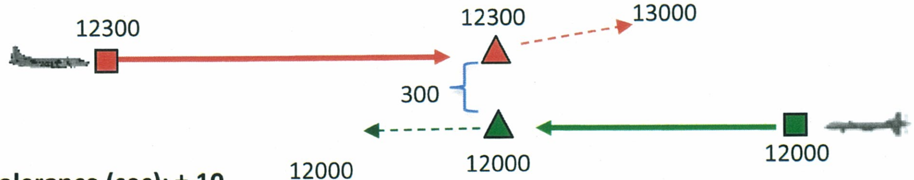


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12300	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12300	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

12.5 Flight 5 Redlined Flight Cards

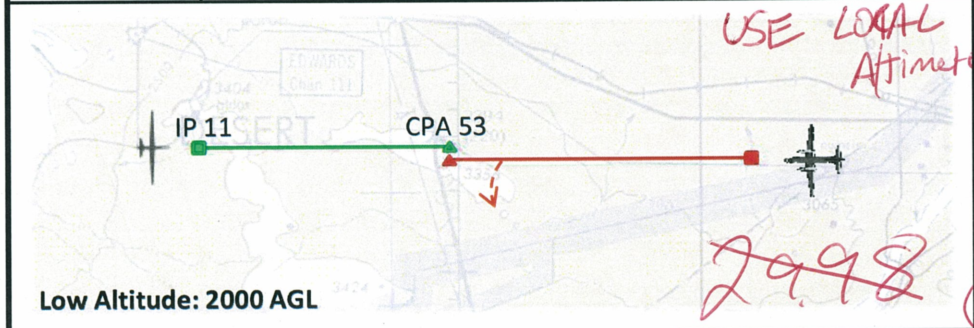
20150626

Order of Cards
Flight 5

Ver 1

Card #	Scenario	Priority	Config	Ownship Manuever	Intruder	Notes
1	108 - L12A (2)	1	Low Altitude Radar	Non-Maneuvering / Cooperative	N3GC	LOS unlikely
2	107 - L12A (1)	1			N3GC	LOS unlikely
3	112 - L11A (2)	1			N3GC	LOS unlikely
4	111 - L11A (1)	1			N3GC	LOS unlikely
5	164 - L42M	1	CPDS	Maneuver based on CPDS display Intruder turns in front or behind Ownship	N3GC	Virtual Offset & ADVISORY
6	165 - L52M (1)	1			N3GC	Virtual Offset & ADVISORY
7	166 - L52M (2)	1			N3GC	Virtual Offset & ADVISORY
8	167 - L52M (3)	1			N3GC	Virtual Offset & ADVISORY
9	168 - L52M (4)	1			N3GC	Virtual Offset & ADVISORY
10	169 - M79X (1)	1	CPDS	Maneuver based on CPDS display	N3GC/865	
11	170 - M79X (2)	1			N3GC/865	
12	171 - M79X (3)	1			N3GC/865	
13	160 - M67Q	1	TCAS Sequential	Manual	N3GC/865	
		1		Manual	N3GC/865	
		1		Auto	N3GC/865	
16	161 - M68Q	1		Manual	N3GC/865	
		1		Manual	N3GC/865	
		1		Auto	N3GC/865	
19	132 - L31A	1	TCAS	Manual		
20	132 - L31A	1		Auto		
		1		Manual		
		1		Auto		
		1		Manual		
		1		Auto		
		1		Manual		
		1		Auto		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:108	Version 9
Card# 1	**L12A**		Ownship



USE LOCAL Altimeter

~~29.98~~

29.99

Low Altitude: 2000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

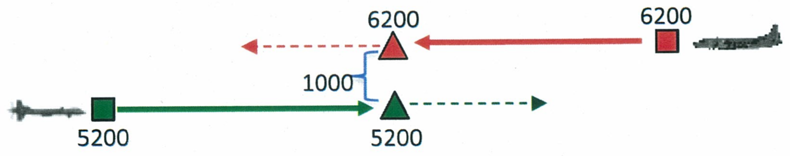
LOST LINK MISSION:

DECONFLICTION ALT:
5200

ABORT PROCEDURE

5200	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☑ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



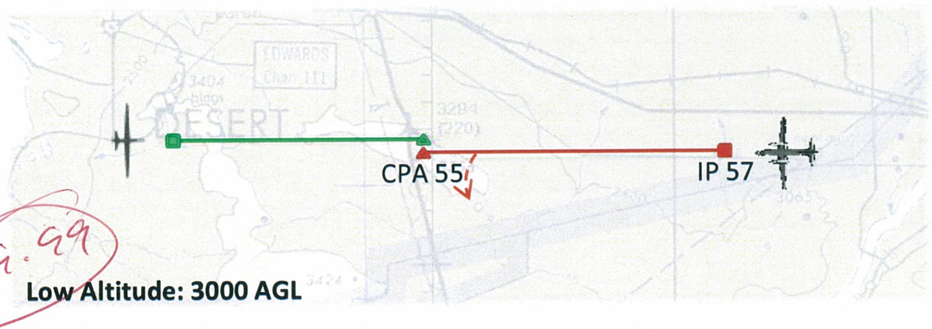
Tolerance (sec): ± 10

COMEX TIME: 0637 IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP11	**N34° 54.14'**	**W117° 40.96'**	5200	8.8	**150**	
	N34° 54' 08.2"	**W117° 40' 57.5"**	0	078		
CPA53	**N34° 54.14'**	**W117° 30.29'**	5200	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana fly through/non-maneuvering, 3.5 min, Ku SATCOM

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:108	Version 9
Card#	**L12A**		Intruder 1



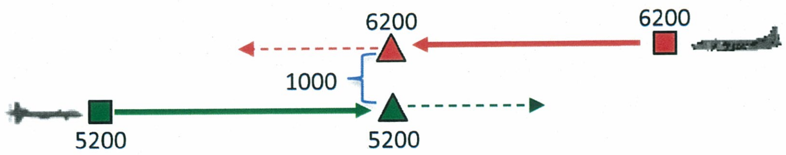
Low Altitude: 3000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
6200

ABORT PROCEDURE

6200	**240**



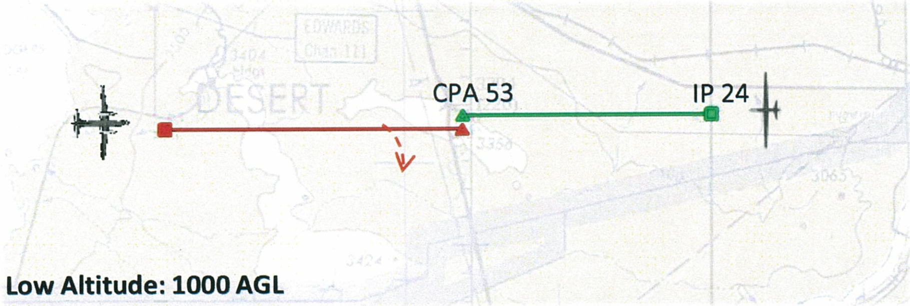
Tolerance (sec): ± 10

COMEX TIME: IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP57	**N34° 53.64'**	**W117° 17.49'**	6200	10.5	**180**	
	N34° 53' 38.6"	**W117° 17' 29.3"**	0	258		
CPA55	**N34° 53.64'**	**W117° 30.29'**	6200	0.0	**180**	
	N34° 53' 38.6"	**W117° 30' 17.4"**	0	258		

NOTE: Cooperative/non-maneuvering, 3.5 min

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:107	Version 9
Card# 2	**L12A**	Ownship	



Low Altitude: 1000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

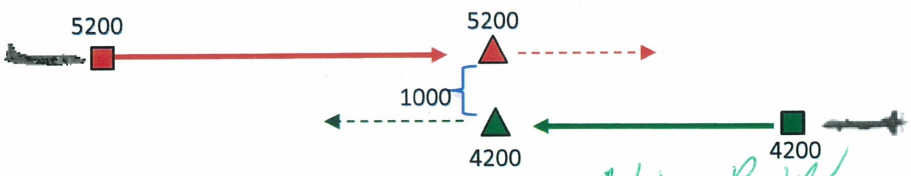
LOST LINK MISSION:

DECONFLICTION ALT:
4200

ABORT PROCEDURE

4200	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☑ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



Nice RUN

Tolerance (sec): ± 10

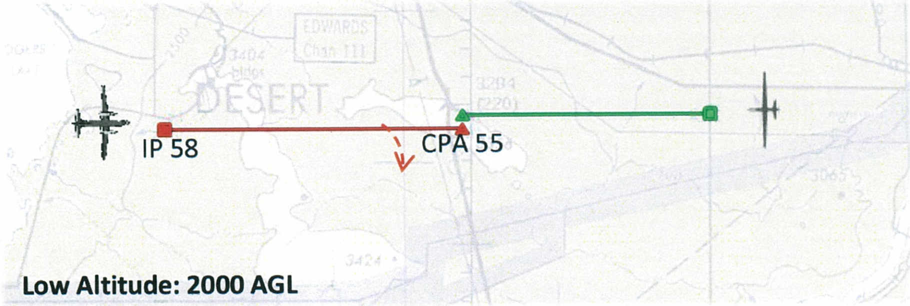
COMEX TIME: 0647

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP24	**N34° 54.14'**	**W117° 19.62'**	4200	8.8	**150**	
	N34° 54' 08.2"	**W117° 19' 37.3"**	0	258		
CPA53	**N34° 54.14'**	**W117° 30.29'**	4200	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana fly through/non-maneuvering, 3.5 min, Ku SATCOM

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:107	Version 9
Card#	**L12A**	Intruder 1	



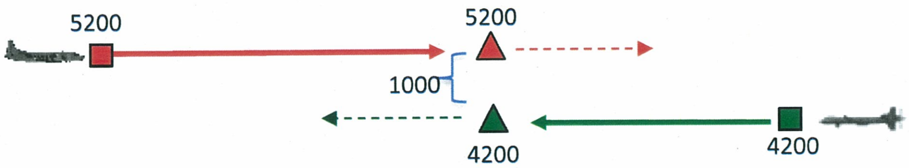
Low Altitude: 2000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
5200

ABORT PROCEDURE

5200	**120**



Tolerance (sec): ± 10

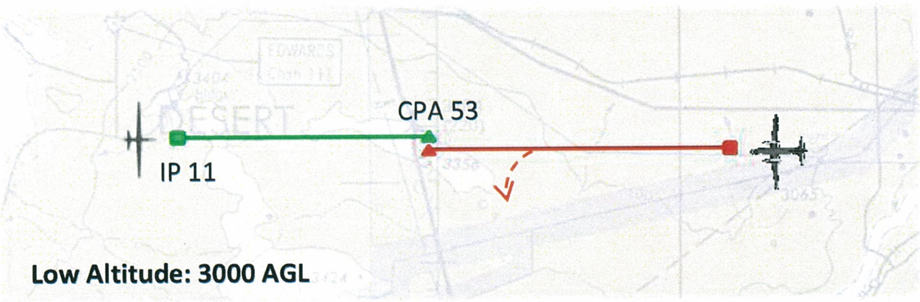
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP58	**N34° 53.64'**	**W117° 43.09'**	5200	10.5	**180**	
	N34° 53' 38.6"	**W117° 43' 05.5"**	0	078		
CPA55	**N34° 53.64'**	**W117° 30.29'**	5200	0.0	**180**	
	N34° 53' 38.6"	**W117° 30' 17.4"**	0	078		

NOTE: Cooperative/non-maneuvering, 3.5 min

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:112	Version 9
Card# 3	**L11A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

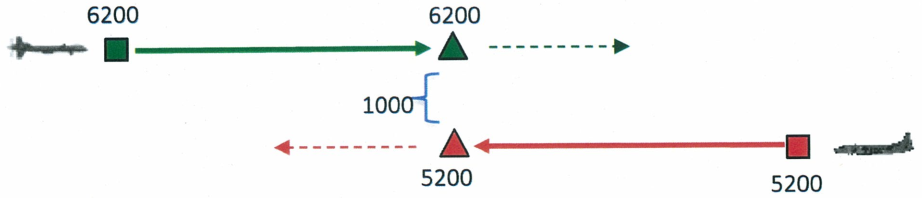
LOST LINK MISSION:

DECONFLICTION ALT:
6200

ABORT PROCEDURE

6200	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☑ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0657 0657

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP11	**N34° 54.14'**	**W117° 40.96'**	6200	8.8	**150**	
	N34° 54' 08.2"	**W117° 40' 57.5"**	0	078		
CPA53	**N34° 54.14'**	**W117° 30.29'**	6200	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana fly through/non-maneuvering, 3.5 min, Ku SATCOM

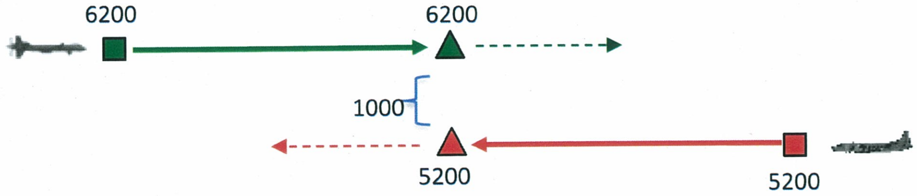
FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:112	Version 9
Card#	**L11A**		Intruder 1

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
5200

ABORT PROCEDURE

5200	**240**



Tolerance (sec): ± 10

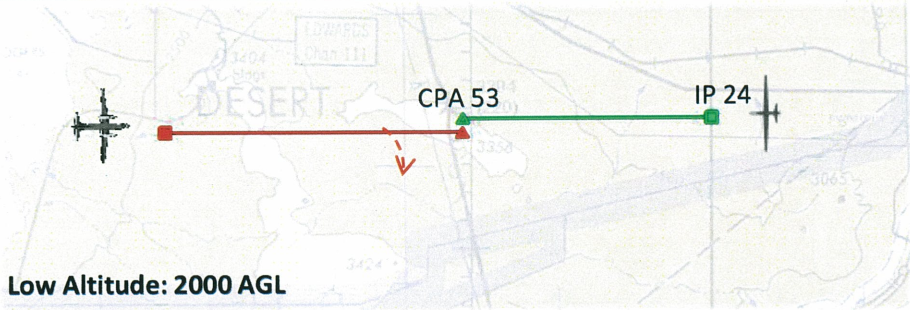
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP57	**N34° 53.64'**	**W117° 17.49'**	5200	10.5	**180**	
	N34° 53' 38.6"	**W117° 17' 29.3"**	0	258		
CPA55	**N34° 53.64'**	**W117° 30.29'**	5200	0.0	**180**	
	N34° 53' 38.6"	**W117° 30' 17.4"**	0	258		

NOTE: Cooperative/non-maneuvering, 3.5 min

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:111	Version 9
Card# 4	**L11A**		Ownship



Low Altitude: 2000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

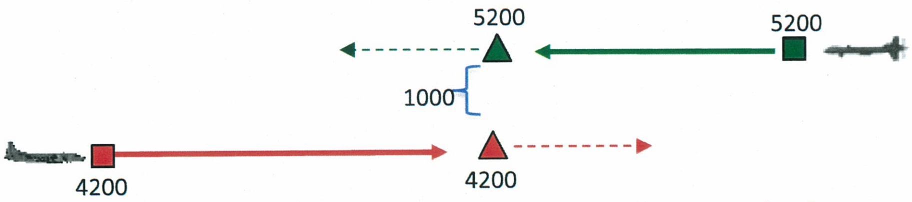
LOST LINK MISSION:

DECONFLICTION ALT:
5200

ABORT PROCEDURE

5200	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☑ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS	☐ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0704			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP24	**N34° 54.14'**	**W117° 19.62'**	5200	8.8	**150**	
	N34° 54' 08.2"	**W117° 19' 37.3"**	0	258		
CPA53	**N34° 54.14'**	**W117° 30.29'**	5200	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana fly through/non-maneuvering, 3.5 min, Ku SATCOM

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:111	Version 9
Card#	**L11A**		Intruder 1

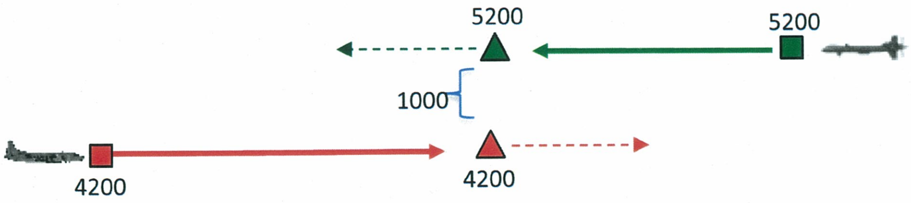
Low Altitude: 1000 AGL

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
4200

ABORT PROCEDURE

4200	**120**

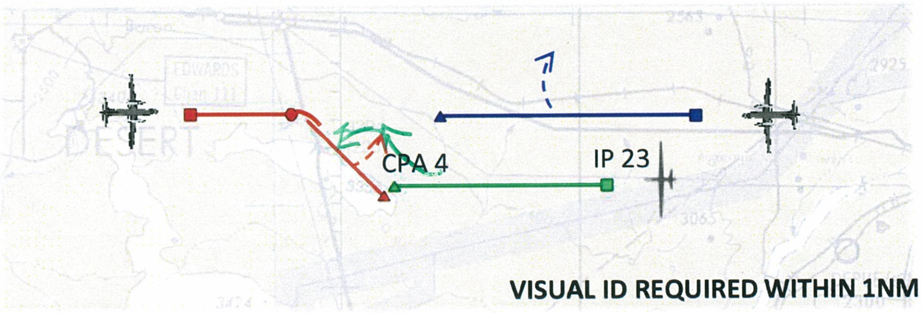


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP58	**N34° 53.64'**	**W117° 43.09'**	4200	10.5	**180**	
	N34° 53' 38.6"	**W117° 43' 05.5"**	0	078		
CPA55	**N34° 53.64'**	**W117° 30.29'**	4200	0.0	**180**	
	N34° 53' 38.6"	**W117° 30' 17.4"**	0	078		

NOTE: Cooperative/non-maneuvering, 3.5 min

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:169	Version 9
Card# 10	**M79X**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

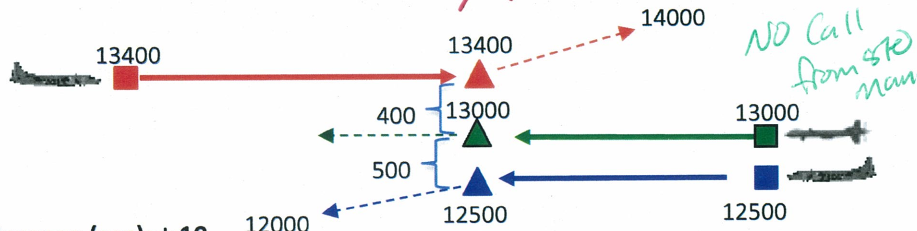
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☑ TCAS ☒ TRACKER



NO Call from 870 manue

Tolerance (sec): ± 10

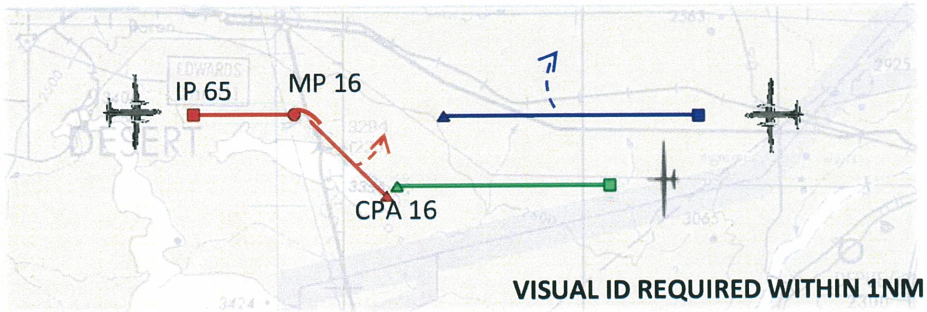
COMEX TIME: 0622

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:169	Version 9
Card#	**M79X**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

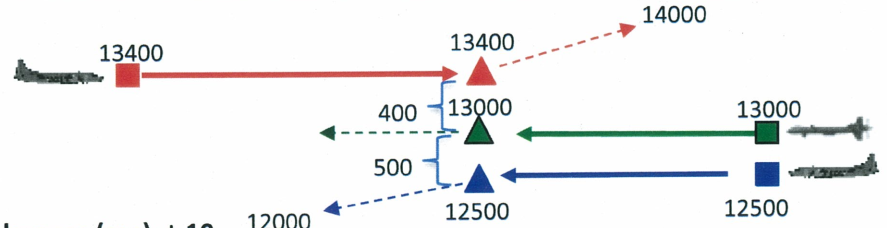
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**060**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



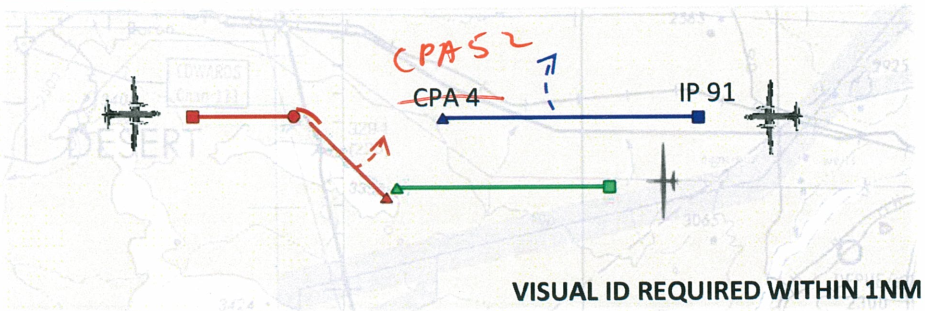
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP65	**N34° 56.18'**	**W117° 36.37'**	13400	3.6	**160**	
	N34° 56' 10.8"	**W117° 36' 22.3"**	0	078		
MP16	**N34° 56.18'**	**W117° 32.04'**	13400	4.5	**160**	
	N34° 56' 10.8"	**W117° 32' 02.1"**	0	123		
CPA16	**N34° 53.26'**	**W117° 28.05'**	13400	0.0	**160**	
	N34° 53' 15.7"	**W117° 28' 02.7"**	0	123		

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:169	Version 9
Card# 10	**M79X**		Intruder 2



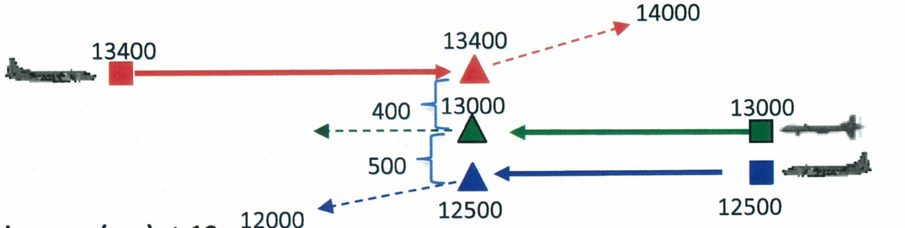
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**300**



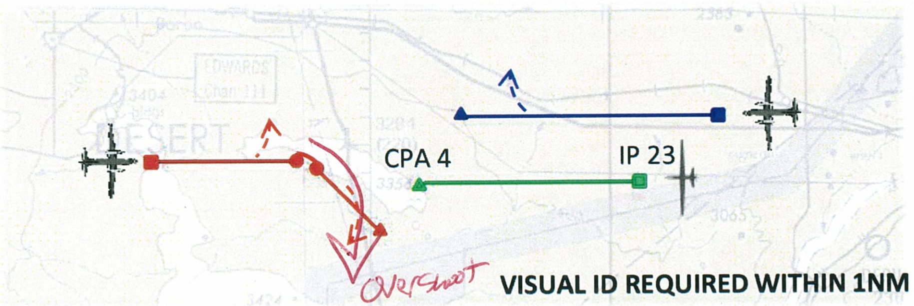
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP91	**N34° 56.09'**	**W117° 14.64'**	12500	9.0	**180**	
	N34° 56' 05.1"	**W117° 14' 38.6"**	0	258		
CPA 52 **CPA4**	~~**N34° 53.61'**~~	~~**W117° 27.62'**~~	~~12500~~	0.0	**180**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.

34° 56.09 N
117° 25.62 W

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:170	Version 9
Card# 11	**M79X**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

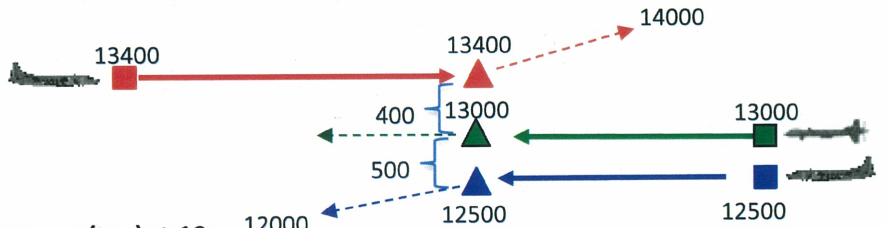
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☐ RADAR	☑ TCAS	☐ TRACKER

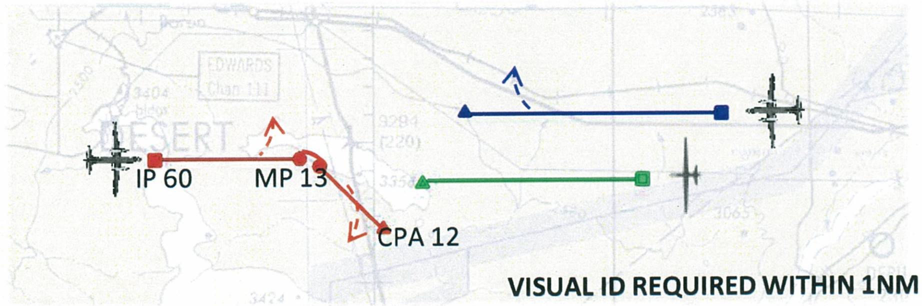


Tolerance (sec): ± 10

COMEX TIME: 0834 0834			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:170	Version 9
Card#	**M79X**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

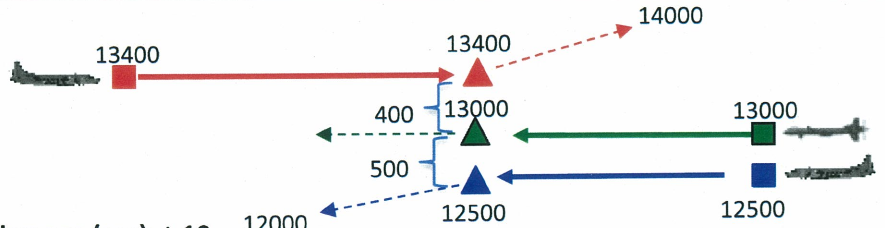
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**060**

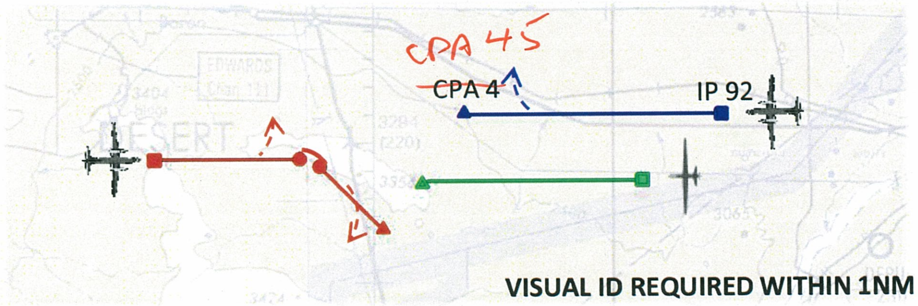
Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP60	**N34° 54.42'**	**W117° 39.40'**	13400	5.2	**180**	
	N34° 54' 25.0"	**W117° 39' 23.9"**	0	078		
MP13	**N34° 54.42'**	**W117° 33.06'**	13400	3.9	**180**	
	N34° 54' 25.0"	**W117° 33' 03.5"**	0	123		
CPA12	**N34° 51.98'**	**W117° 29.61'**	13400	0.0	**180**	
	N34° 51' 58.8"	**W117° 29' 36.4"**	0	123		

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:170	Version 9
Card# 11	**M79X**		Intruder 2



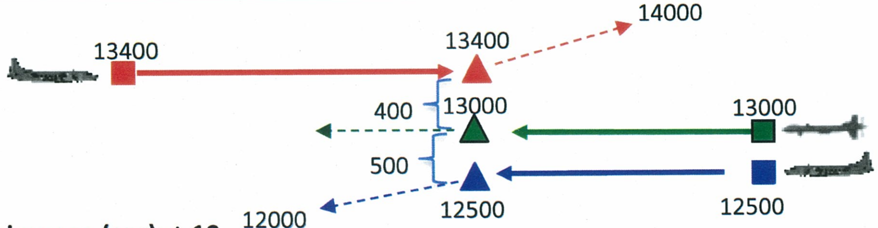
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**300**



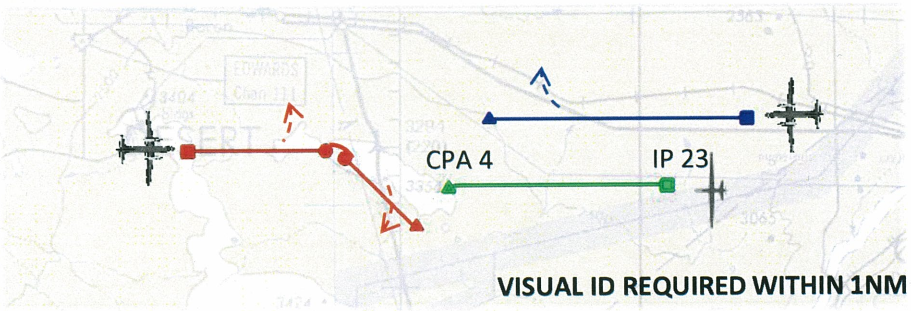
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP92	**N34° 55.99'**	**W117° 14.99'**	12500	9.0	**180**	
CPA45	**N34° 55' 59.1"**	**W117° 14' 59.2"**	0	258		
CPA4	~~**N34° 53.61'**~~	~~**W117° 27.62'**~~	12500	0.0	**180**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.

CPA 45
34° 55.99 N
117° 25.97W

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:171	Version 9
Card# 12	**M79X**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

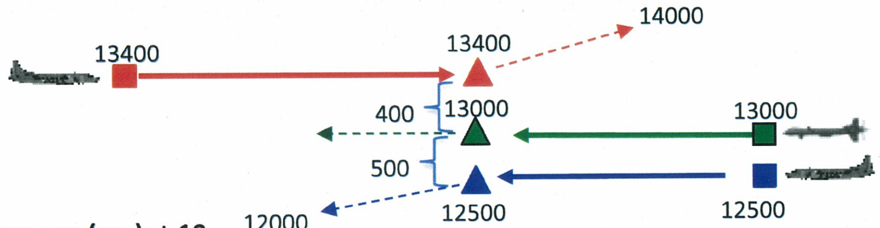
LOST LINK MISSION:

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☐ RADAR	☑ TCAS
			☐ TRACKER



Tolerance (sec): ± 10

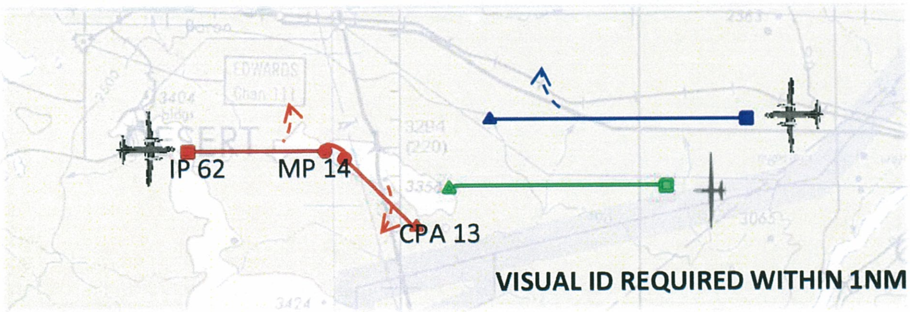
COMEX TIME: 0446

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:171	Version 9
Card#	**M79X**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

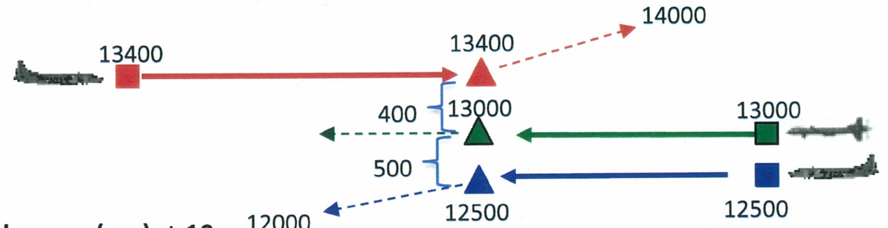
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **14000**

ABORT PROCEDURE

14000	**060**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



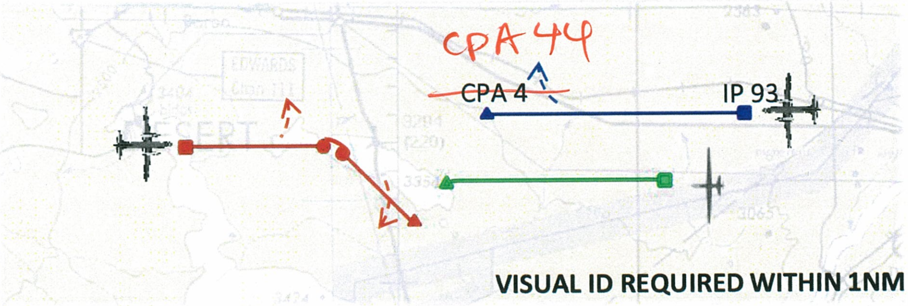
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP62	**N34° 54.88'**	**W117° 39.01'**	13400	4.9	**180**	
	N34° 54' 52.8"	**W117° 39' 00.7"**	0	078		
MP14	**N34° 54.88'**	**W117° 33.10'**	13400	4.1	**180**	
	N34° 54' 52.8"	**W117° 33' 05.9"**	0	123		
CPA13	**N34° 52.20'**	**W117° 29.34'**	13400	0.0	**180**	
	N34° 52' 11.8"	**W117° 29' 20.6"**	0	123		

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:171	Version 9
Card# 2	**M79X**		Intruder 2



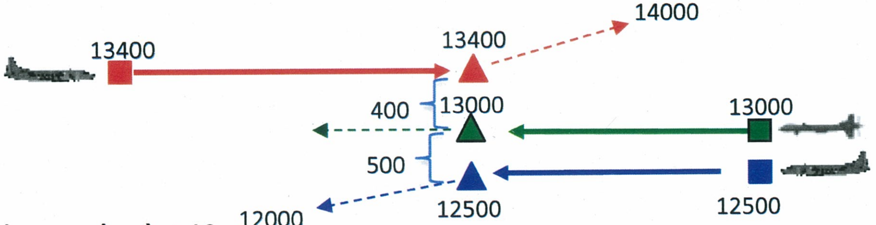
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**300**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

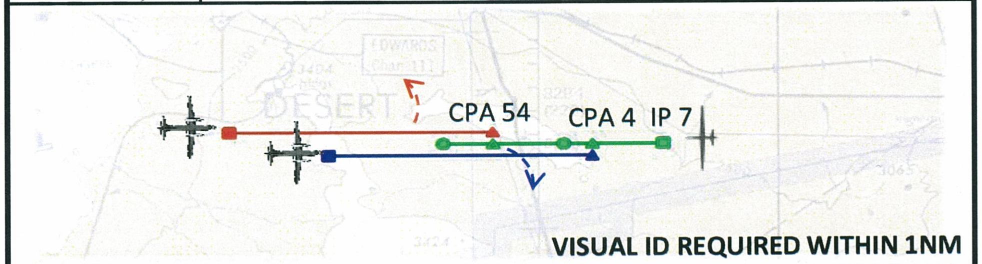
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP93	**N34° 55.99'**	**W117° 15.06'**	12500	9.0	**180**	
	N34° 55' 59.1"	**W117° 15' 03.5"**	0	258		
CPA44 ~~**CPA4**~~	~~**N34° 53.61'**~~	~~**W117° 27.62'**~~	12500	0.0	**180**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.

CPA44

34° 55.99 N
117° 26.04 W

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:160	Version 9
Card# 13	**M67Q**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

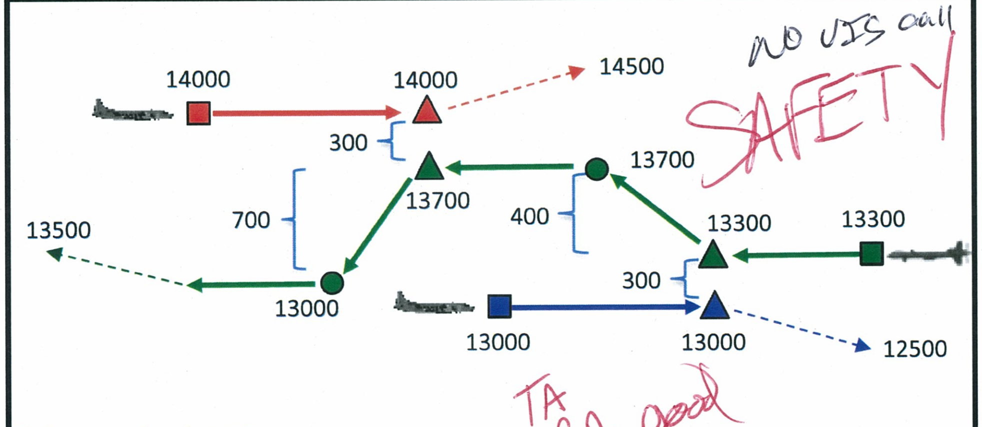
☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER

LOST LINK MISSION:

DECONFLICTION ALT:
~~13000~~ 13,500

ABORT PROCEDURE

13500	**MAINTAIN HDG**



no VIS call

SAFETY

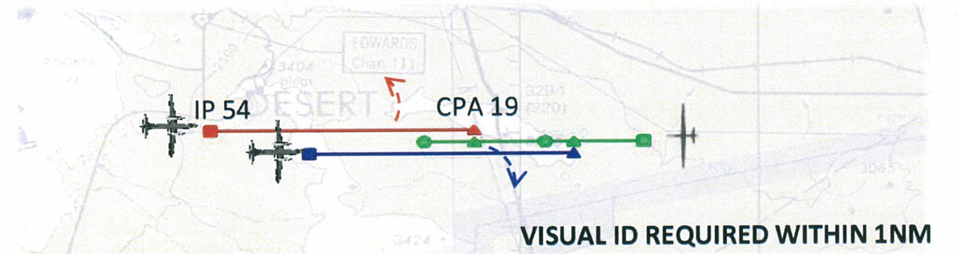
TA
RA good

Tolerance (sec): ± 10

COMEX TIME: 0656

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	Notes
IP7	**N34° 53.61'**	**W117° 24.57'**	13300	2.5	**150**	
	N34° 53' 36.6"	**W117° 24' 34.3"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13300	3.5	**150**	Expected climb alert, climb and level to 13700
	N34° 53' 36.6"	**W117° 27' 37.2"**	1000	258		
CPA54	**N34° 53.61'**	**W117° 31.89'**	13700	0.0	**150**	Expected descend alert, descend and level to 13000
	N34° 53' 36.6"	**W117° 31' 53.2"**	-1000	258		

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:160	Version 9
Card#	**M67Q**		Intruder 1



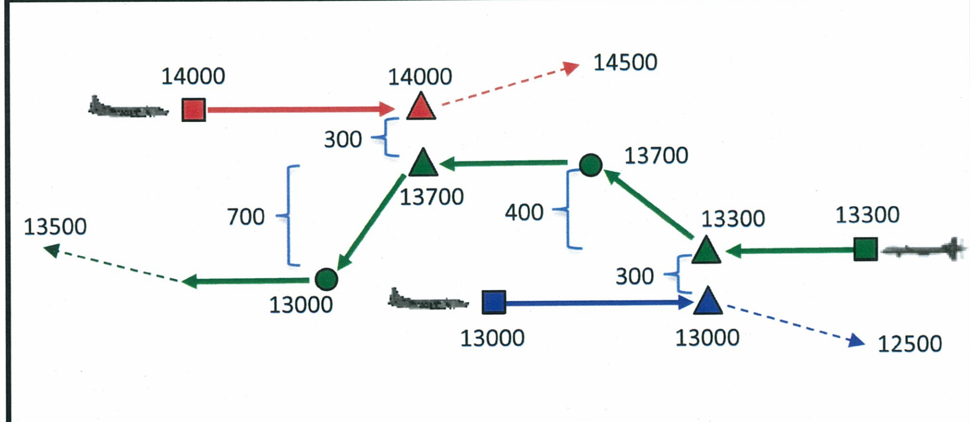
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	**060**



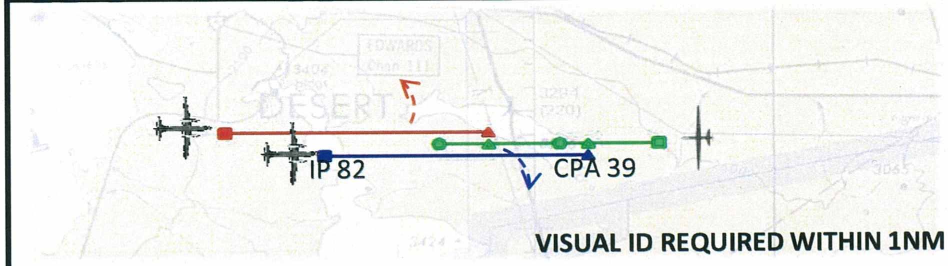
Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	TIME HACK
IP54	**N34° 54.10'**	**W117° 43.23'**	14000	9.3	**180**	
	N34° 54' 06.2"	**W117° 43' 13.6"**	0	078		
CPA19	**N34° 54.10'**	**W117° 31.89'**	14000	0.0	**180**	
	N34° 54' 06.2"	**W117° 31' 53.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:160	Version 9
Card# 13	**M67Q**		Intruder 2

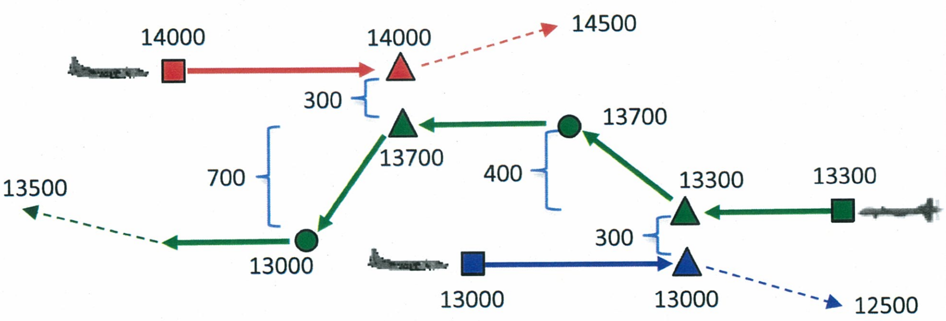


VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
~~12000~~ 13,000

12500	120

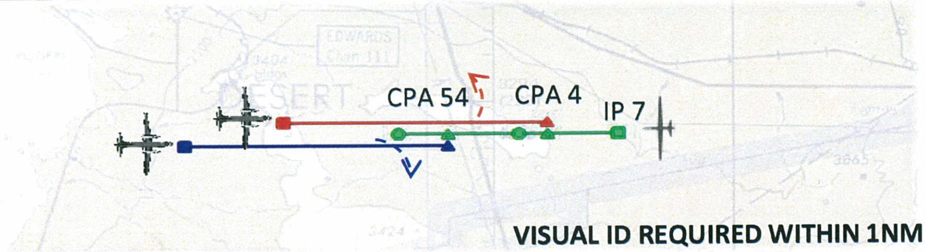


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP82	N34° 53.12'	W117° 38.96'	13000	9.3	180	
	N34° 53' 07.0"	W117° 38' 57.4"	0	078		
CPA39	N34° 53.12'	W117° 27.62'	13000	0.0	180	
	N34° 53' 07.0"	W117° 27' 37.2"	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:161	Version 9
Card# 16	~~M27Q~~ M68Q		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

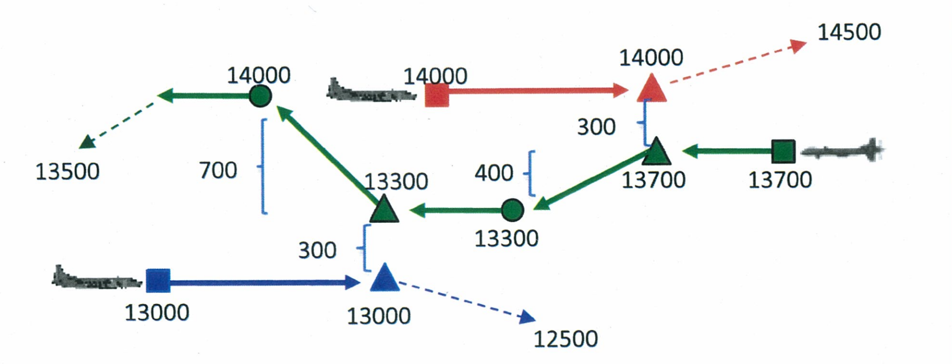
☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER

LOST LINK MISSION:

DECONFLICTION ALT:
~~13000~~ 13500

ABORT PROCEDURE

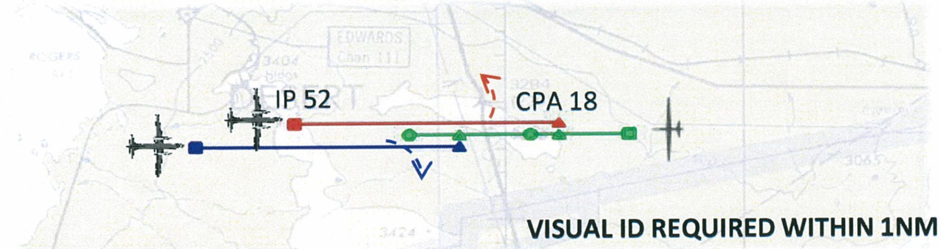
13500	MAINTAIN HDG



Tolerance (sec): ± 10

COMEX TIME: 0909			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	Notes
IP7	N34° 53.61'	W117° 24.57'	13700	2.5	150	
	N34° 53' 36.6"	W117° 24' 34.3"	0	258		
CPA4	N34° 53.61'	W117° 27.62'	13700	3.5	150	Expected descend alert, descend and level to 13300
	N34° 53' 36.6"	W117° 27' 37.2"	-1000	258		
CPA54	N34° 53.61'	W117° 31.89'	13300	0.0	150	Expected climb alert, climb and level to 14000
	N34° 53' 36.6"	W117° 31' 53.2"	1000	258		

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:161	Version 9
Card#	~~M27Q~~ M68Q		Intruder 1



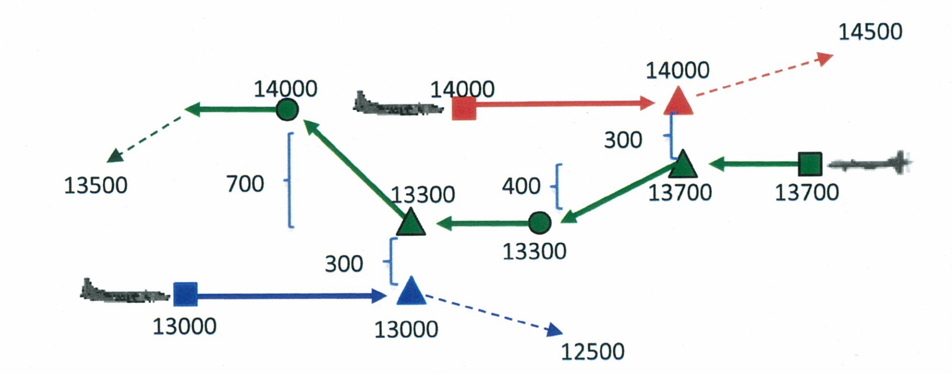
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	060

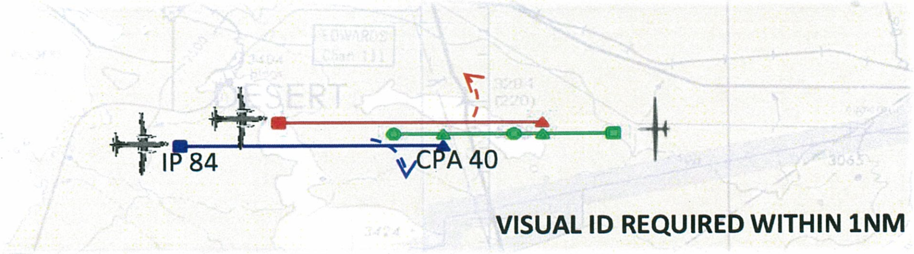


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP52	N34° 54.10'	W117° 38.96'	14000	9.3	180	
	N34° 54' 06.2"	W117° 38' 57.6"	0	078		
CPA18	N34° 54.10'	W117° 27.62'	14000	0.0	180	
	N34° 54' 06.2"	W117° 27' 37.2"	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:161	Version 9
Card# 16	~~M27Q~~ M68Q		Intruder 2

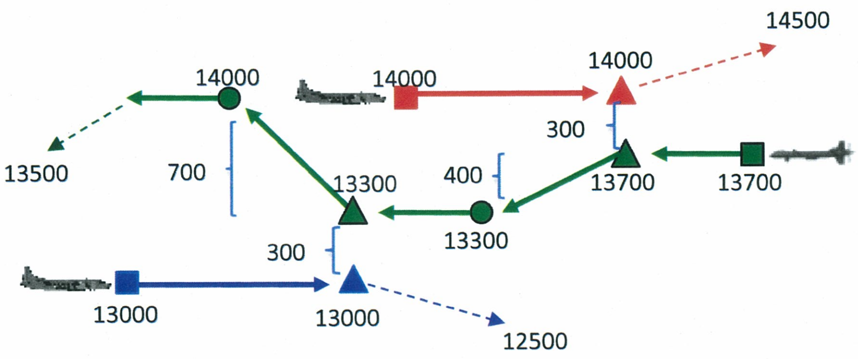


VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

12500	120

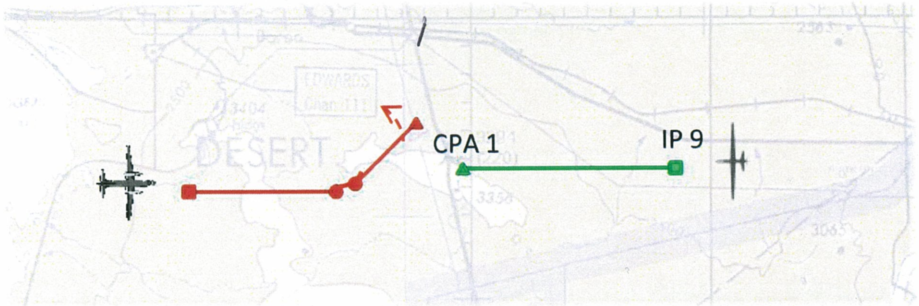


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP84	N34° 53.12'	W117° 43.23'	13000	9.3	180	
	N34° 53' 07.0"	W117° 43' 13.5"	0	078		
CPA40	N34° 53.12'	W117° 31.89'	13000	0.0	180	
	N34° 53' 07.0"	W117° 31' 53.2"	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:165	Version 9
Card# 6	**L52M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

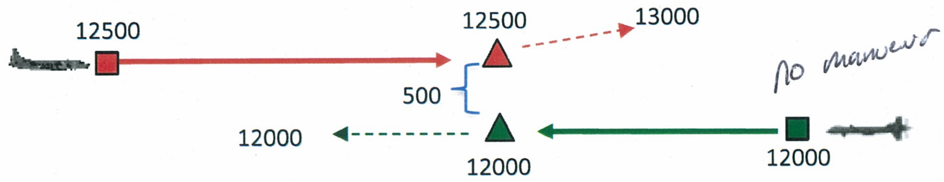
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1
☐ AR 2
☐ OFF
☑ ADS-B
☐ Stratway+
☑ Advisory
☐ RADAR
☑ CPDS
☐ AUTO
☑ TCAS
☐ TRACKER



no maneuver

Tolerance (sec): ± 10

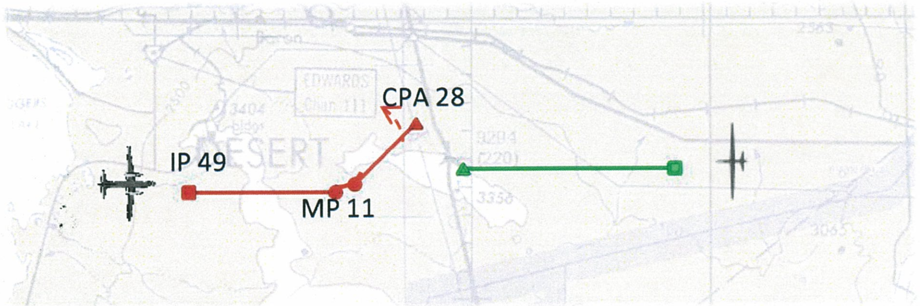
COMEX TIME: 0924

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8''	**W117° 21' 08.7''**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8''	**W117° 30' 17.4''**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:165	Version 9
Card#	**L52M**		Intruder 1



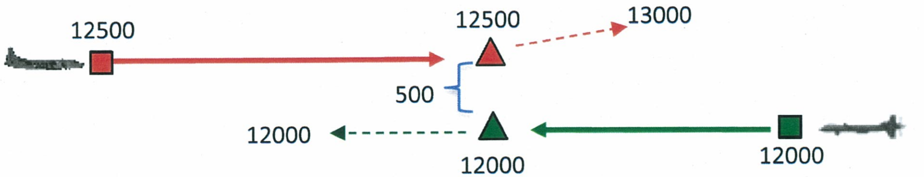
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**330**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



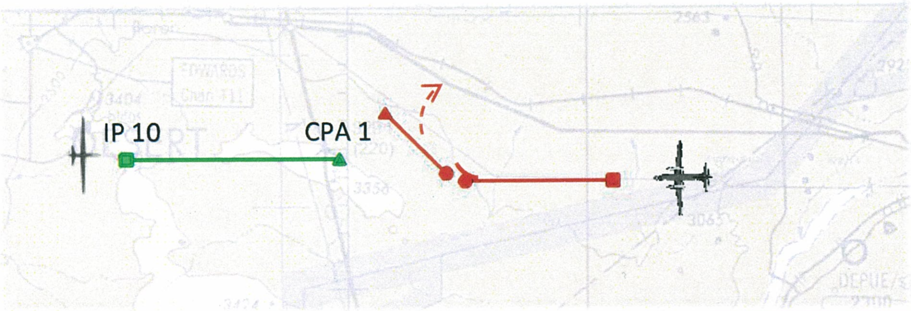
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP49	**N34° 53.82'**	**W117° 42.07'**	12500	5.2	**180**	
	N34° 53' 49.4''	**W117° 42' 04.3''**	0 ok	078		
MP11	**N34° 53.82'**	**W117° 35.73'**	12500	3.7	**180**	
	N34° 53' 49.4''	**W117° 35' 43.9''**	0 ok	033		
CPA28	**N34° 56.26'**	**W117° 32.28'**	12500	0.0	**180**	
	N34° 56' 15.6''	**W117° 32' 16.6''**	0 ok	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:166	Version 9
Card# 7	**L52M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:

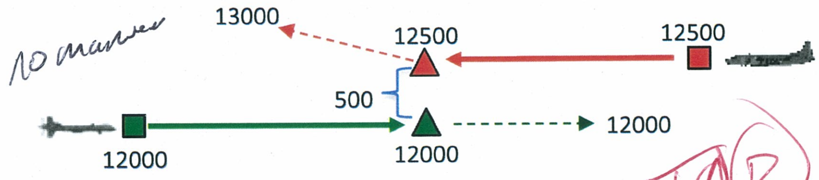
DECONFLICTION ALT: **12000**

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☑ TCAS	☐ TRACKER

no maneuver



TAB

Tolerance (sec): ± 10

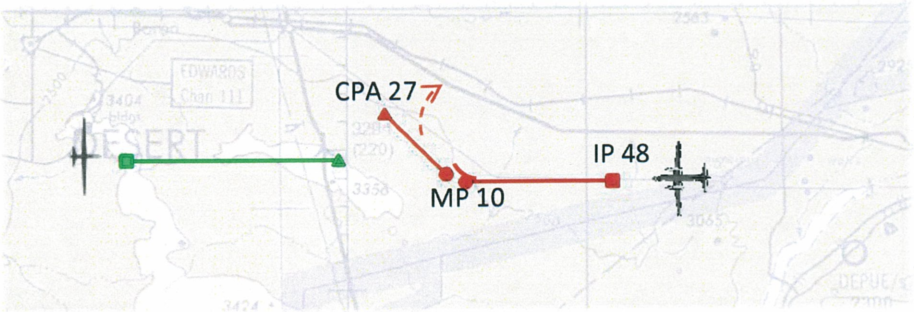
COMEX TIME: 0935 0937

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP10	**N34° 54.63'**	**W117° 39.44'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 39' 26.1"**	0	078		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:166	Version 9
Card#	**L52M**		Intruder 1



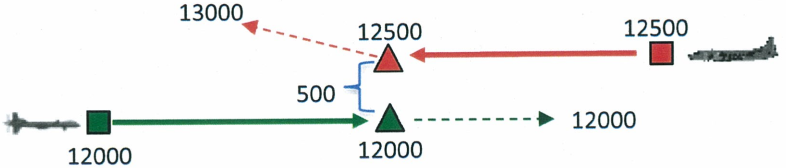
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: **13000**

ABORT PROCEDURE

13000	**060**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



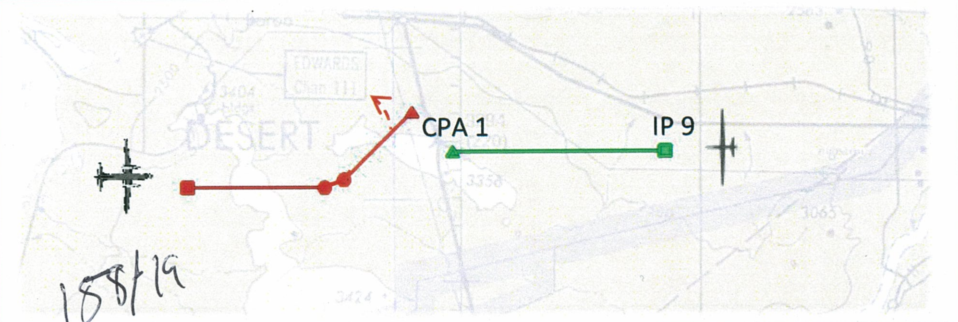
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP48	**N34° 53.82'**	**W117° 18.51'**	12500	5.2	**180**	
	N34° 53' 49.4"	**W117° 18' 30.5"**	0	~~078~~ 258		
MP10	**N34° 53.82'**	**W117° 24.85'**	12500	3.7	**180**	
	N34° 53' 49.4"	**W117° 24' 50.9"**	0	~~033~~ 303		
CPA27	**N34° 56.26'**	**W117° 28.30'**	12500	0.0	**180**	
	N34° 56' 15.6"	**W117° 28' 18.2"**	0	~~033~~ 303		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:167	Version 9
Card# 8	**L52M**		Ownship



188/19

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

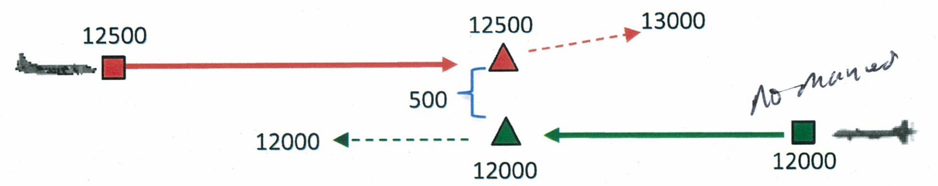
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☑ TCAS ☐ TRACKER



No maned

Tolerance (sec): **± 10**

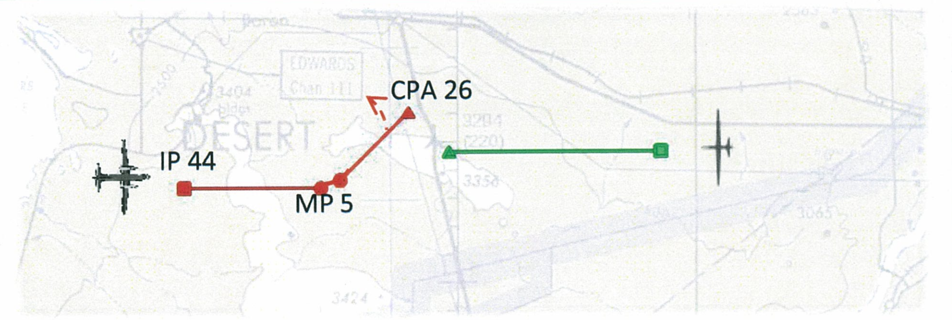
COMEX TIME: 0947 0947

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. ~~Maintain 0.5 NM or ≥500 ft vertical separation.~~

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:167	Version 9
Card#	**L52M**		Intruder 1



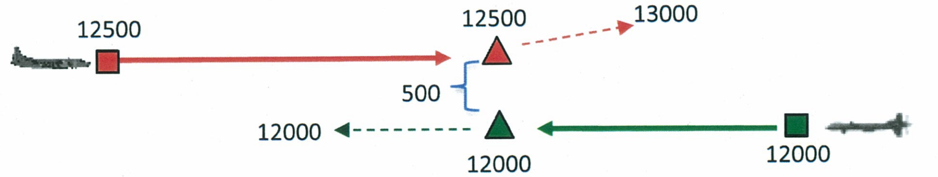
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**330**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



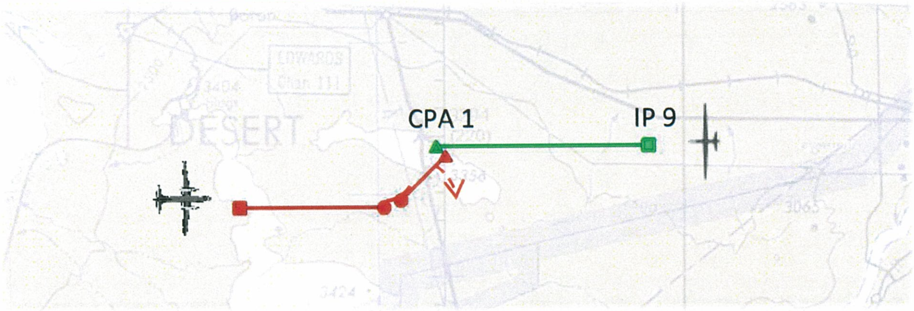
Tolerance (sec): **± 10**

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP44	**N34° 53.36'**	**W117° 41.68'**	12500	5.0	**180**	
	N34° 53' 21.6"	**W117° 41' 41.0"**	0	078		
MP5	**N34° 53.36'**	**W117° 35.77'**	12500	4.0	**180**	
	N34° 53' 21.6"	**W117° 35' 46.2"**	0	033		
CPA26	**N34° 56.04'**	**W117° 32.02'**	12500	0.0	**180**	
	N34° 56' 02.6"	**W117° 32' 00.9"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:168	Version 9
Card# 9	**L52M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

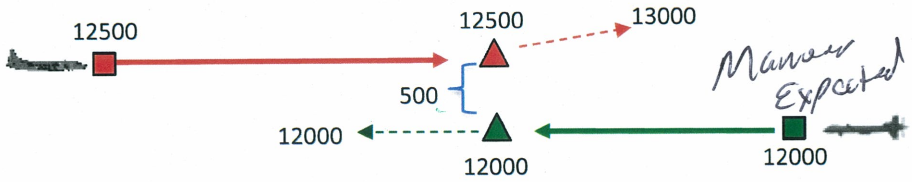
LOST LINK MISSION:

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☑ TCAS ☐ TRACKER



Maneuver Expected

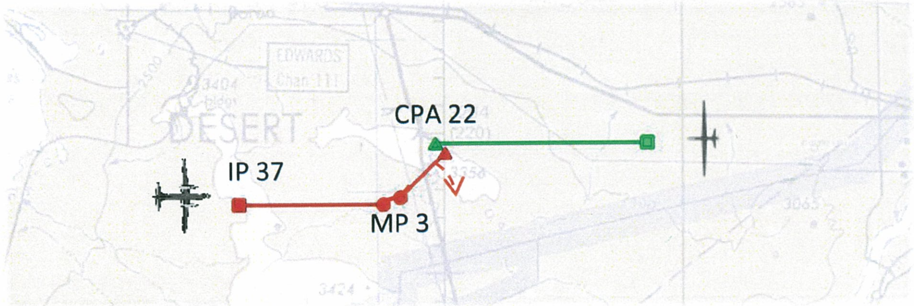
Tolerance (sec): ± 10

COMEX TIME: 0957
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. ~~Maintain 0.5 NM or ≥500 ft vertical separation.~~

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:168	Version 9
Card#	**L52M**		Intruder 1



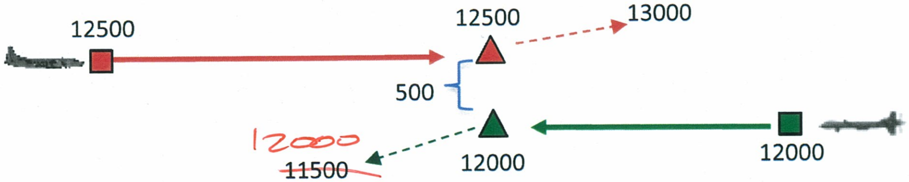
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.

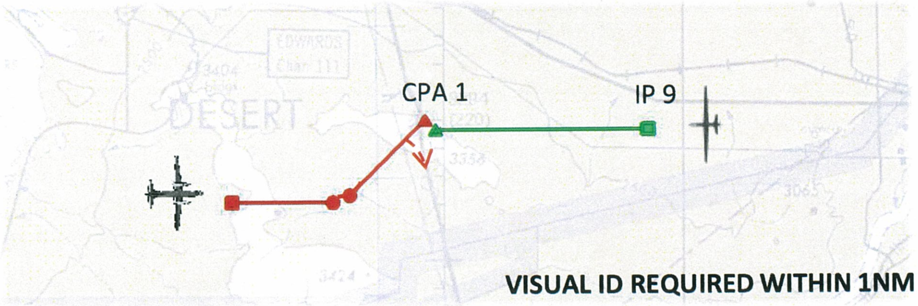


Tolerance (sec): ± 10

COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP37	**N34° 52.46'**	**W117° 38.74'**	12500	5.2	**160**	
	N34° 52' 27.7"	**W117° 38' 44.5"**	0	078		
MP3	**N34° 52.46'**	**W117° 32.51'**	12500	2.9	**160**	
	N34° 52' 27.7"	**W117° 32' 30.7"**	0	033		
CPA22	**N34° 54.28'**	**W117° 29.87'**	12500	0.0	**160**	
	N34° 54' 16.9"	**W117° 29' 51.9"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:164	Version 9
Card# 5	**L42M**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

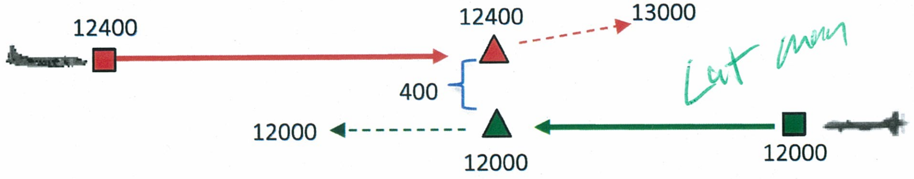
LOST LINK MISSION:

DECONFLICTION ALT:
12000

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☐ RADAR	☑ TCAS	☐ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



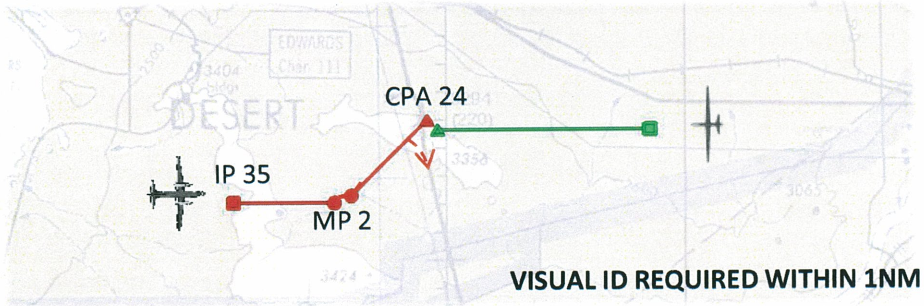
Lat man

Tolerance (sec): ± 10

COMEX TIME: 1007			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:164	Version 9
Card#	**L42M**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

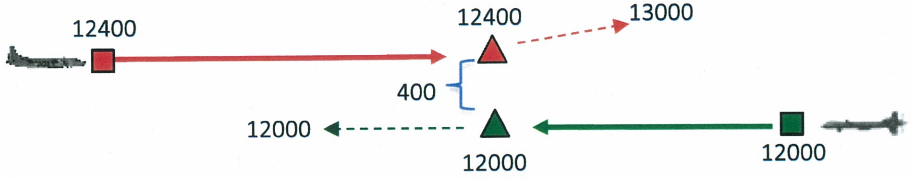
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

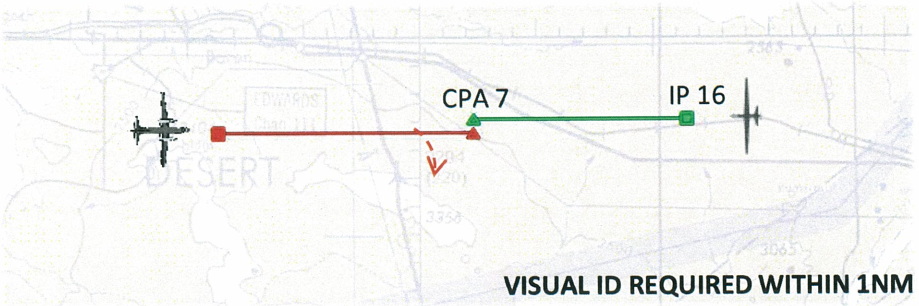
Note: Expect Ikhana maneuver. Maintain 0.5 NM or ≥500 ft vertical separation.



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP35	**N34° 52.06'**	**W117° 39.04'**	12400	3.8	**160**	
	N34° 52' 03.6"	**W117° 39' 02.3"**	0	078		
MP2	**N34° 52.06'**	**W117° 34.71'**	12400	4.4	**160**	
	N34° 52' 03.6"	**W117° 34' 42.3"**	0	033		
CPA24	**N34° 54.98'**	**W117° 30.72'**	12400	0.0	**160**	
	N34° 54' 58.7"	**W117° 30' 42.9"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:132	Version 9
Card# 19	**L31A**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

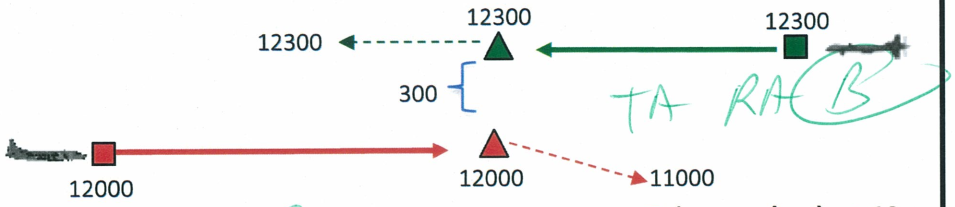
LOST LINK MISSION:

DECONFLICTION ALT: 13000

ABORT PROCEDURE

12300	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER



TA RA B

Tolerance (sec): ± 10

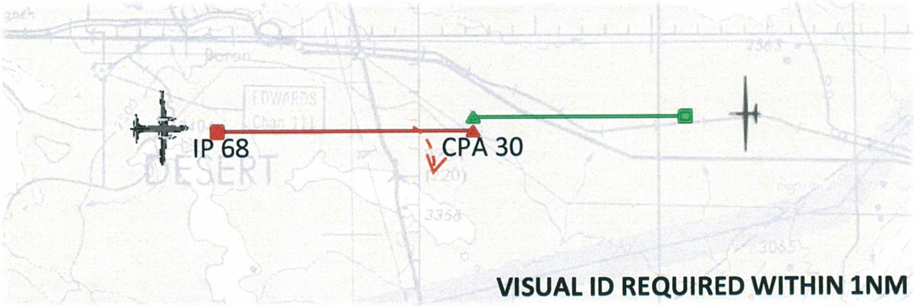
COMEX TIME: 1018

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12300	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12300	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:132	Version 9
Card#	**L31A**		Intruder 1



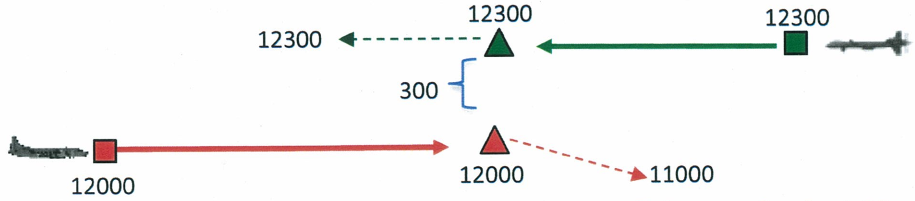
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 12000

ABORT PROCEDURE

11000	120



Tolerance (sec): ± 10

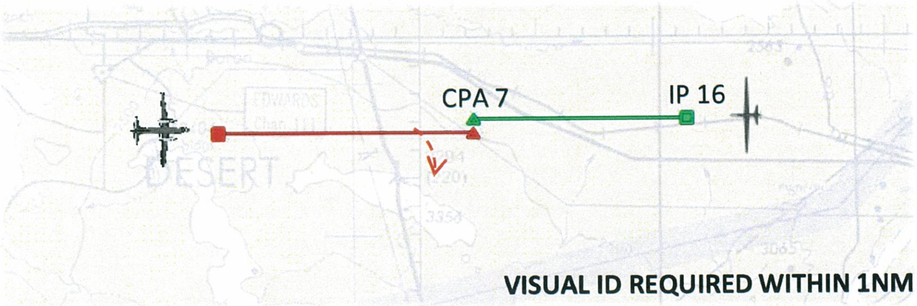
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	12000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12000	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:132	Version 9
Card# 20	**L31A**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

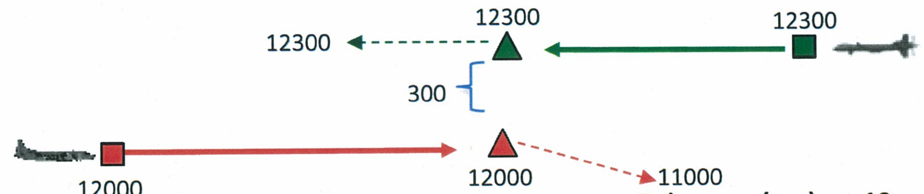
LOST LINK MISSION:

DECONFLICTION ALT:
13000

ABORT PROCEDURE

12300	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☐ Advisory	☑ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER

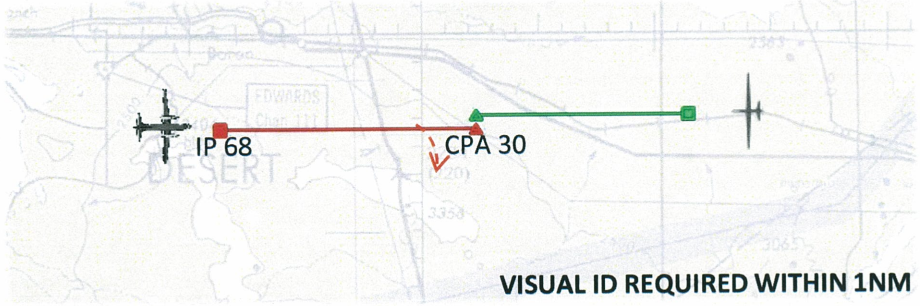


Tolerance (sec): ± 10

COMEX TIME: 1028			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12300	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12300	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N:132	Version 9
Card#	**L31A**		Intruder 1



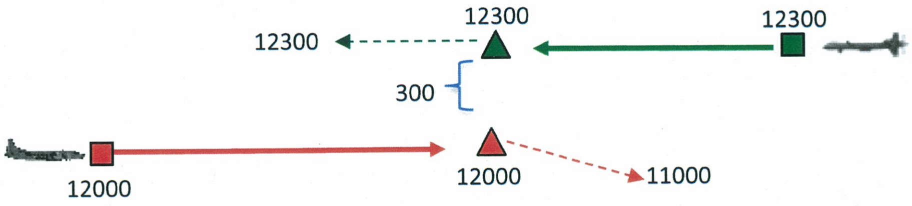
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11000	**120**



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	12000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12000	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

12.6 Flight 6 Redlined Flight Cards

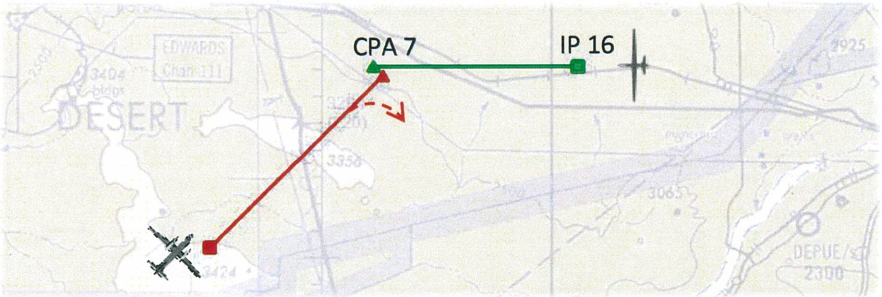
20150707

Order of Cards
Flight 6

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC	
1	25 - L53C	1	Stratway+	Follow Stratway+ Display	N3GC	
2	46 - L53D	1		Follow Stratway+ Display	N3GC	
3	68 - L53F	1		Follow Stratway+ Display	N3GC	
4	26 - L54C	1		Follow Stratway+ Display	N3GC	
5	47 - L54D	1		Follow Stratway+ Display	N3GC	
6	69 - L54F	1		Follow Stratway+ Display	N3GC	
7	5 - L56A	1		Follow Stratway+ Display	N3GC	
8	6 - L56B	1		Follow Stratway+ Display	N3GC	
9	23 - L56C	1		Follow Stratway+ Display	N3GC	
10	44 - L56D	1		Follow Stratway+ Display	N3GC	
11	66 - L56F	1		Follow Stratway+ Display	N3GC	
12	1 - L42A	1		Follow Stratway+ Display	N3GC	
13	2 - L42B	1		Follow Stratway+ Display	N3GC	
14	21 - L42C	1		Follow Stratway+ Display	N3GC	
15	42 - L42D	1		Follow Stratway+ Display	N3GC	
16	64 - L42F	1		Follow Stratway+ Display	N3GC	
17	20 - L32A	1		Follow Stratway+ Display	N3GC	
18	31 - L32C	1		Follow Stratway+ Display	N3GC	
19	51 - L32D	1		Follow Stratway+ Display	N3GC	
20	68 - L53F	2		Follow Stratway+ Display	N3GC	
21	69 - L54F	2		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	2		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	2		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	2		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	1		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	1		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	1		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	1		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	1		Follow Stratway+ Display	N3GC	
[redacted]	[redacted]	2	CPDS Display	None - Fly Through	N3GC	90°
[redacted]	[redacted]	2		None - Fly Through	N3GC	110°
[redacted]	[redacted]	2		None - Fly Through	N3GC	90°

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 25	Version 9
Card# 1	**L53C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

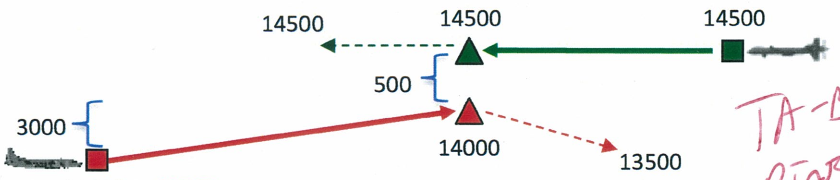
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



TA-B
RTA30°

~~11000~~ 11500

Tolerance (sec): ± 10

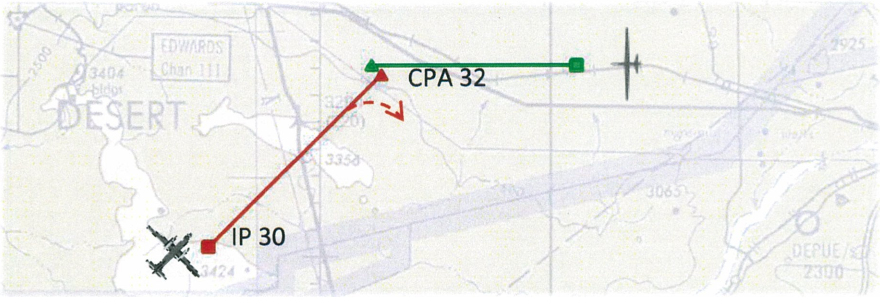
COMEX TIME: 0645

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	14500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

IP TIME ADJUST:

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 25	Version 9
Card#	**L53C**		Intruder 1

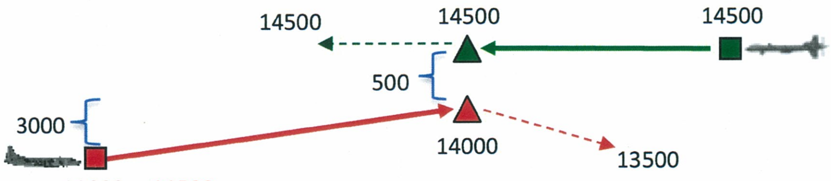


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13500	**120**



~~11000~~ 11500

Tolerance (sec): ± 10

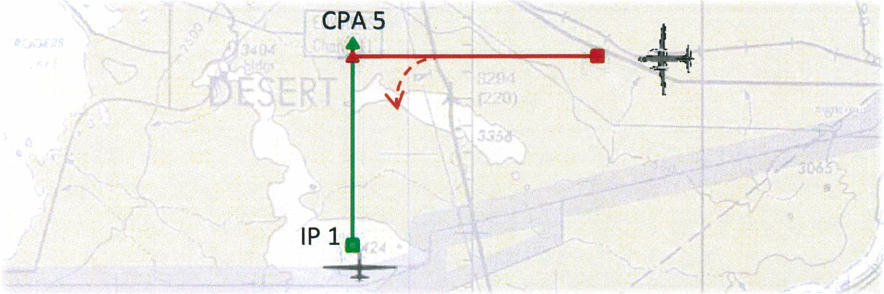
COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	11500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

IP TIME ADJUST:

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 46	Version 9
Card# 2	**L53D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

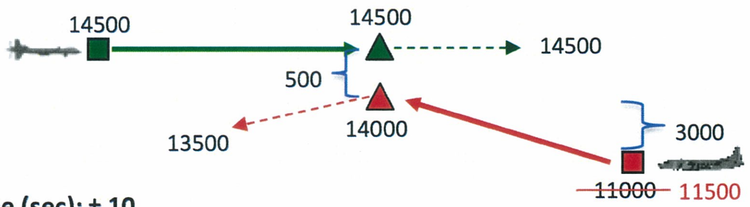
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☑ TRACKER

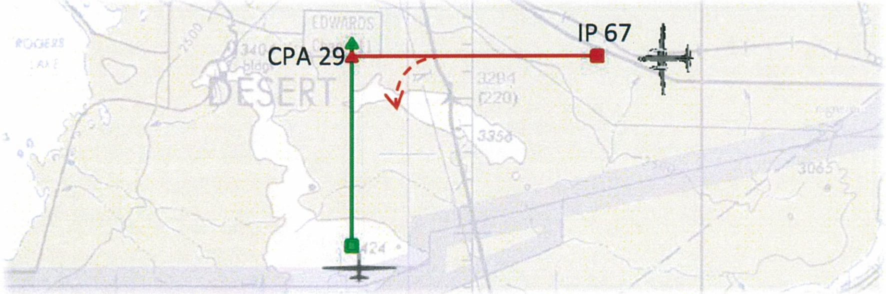


Tolerance (sec): ± 10

COMEX TIME: 0653			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	14500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 46	Version 9
Card#	**L53D**		Intruder 1

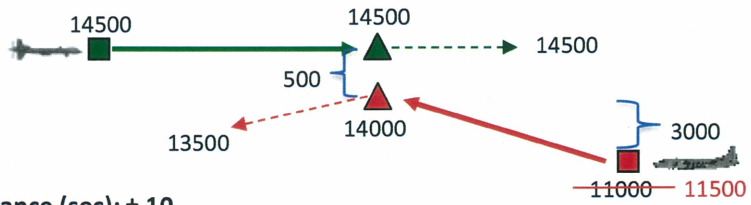


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13500	**150**

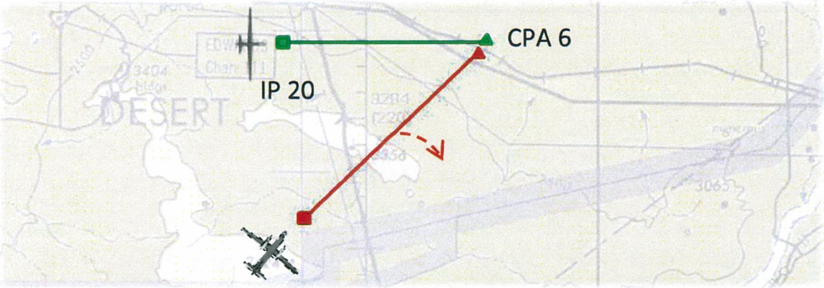


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	11500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14000	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 68	Version 9
Card# 3	**L53F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

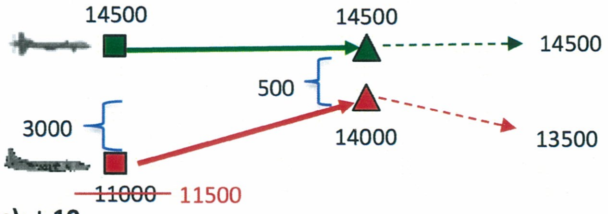
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☐ RADAR	☐ TCAS	☑ TRACKER



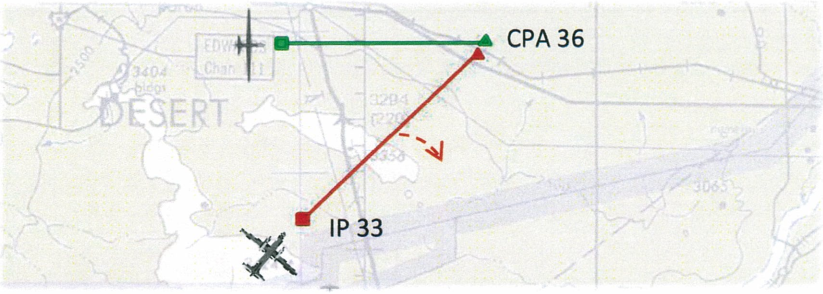
Left Early turn
Blocked out of airspace
Tail Chase

Tolerance (sec): ± 10

COMEX TIME: 0707			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	14500	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14500	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 68	Version 9
Card#	**L53F**		Intruder 1

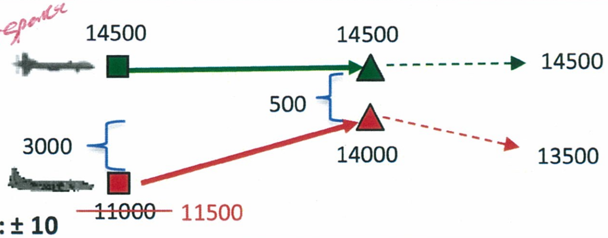


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13500	**120**



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	11500	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14000	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

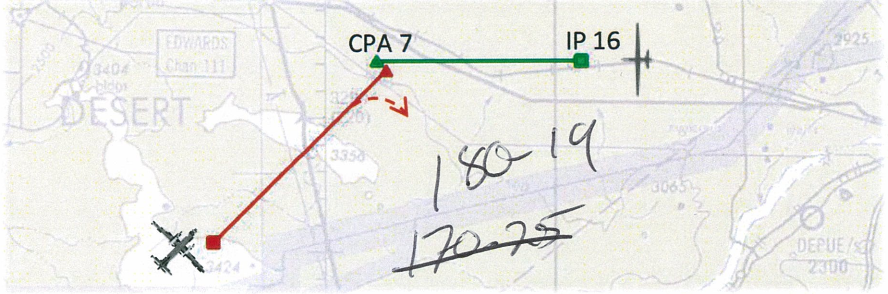
NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 26	Version 9

Card# 4

L54C

Ownship



180 19

~~170 25~~

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

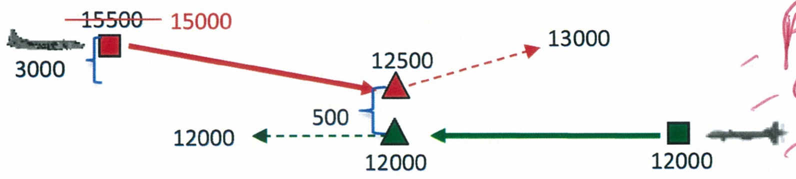
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☑ TRACKER



- RT ~ 20034
- Correcting Back
- Terminate

Tolerance (sec): ± 10

COMEX TIME: 0717				IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

Split track

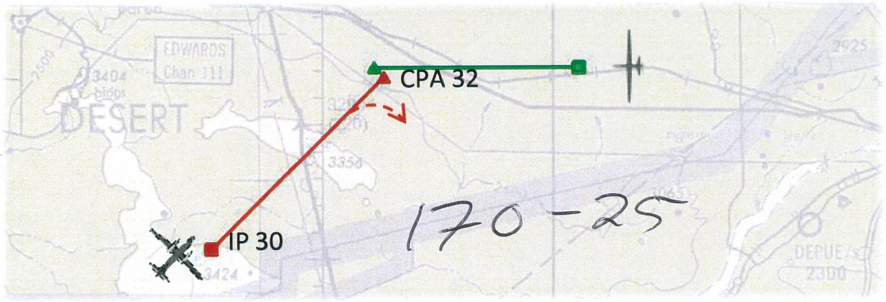
Noise in the vertical

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 26	Version 9

Card#

L54C

Intruder 1



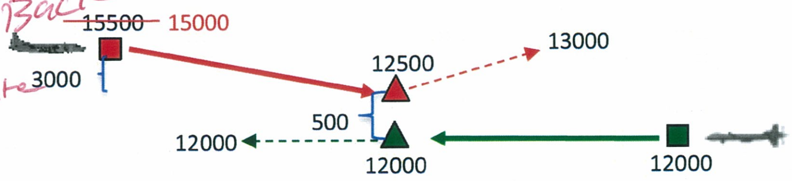
170 - 25

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



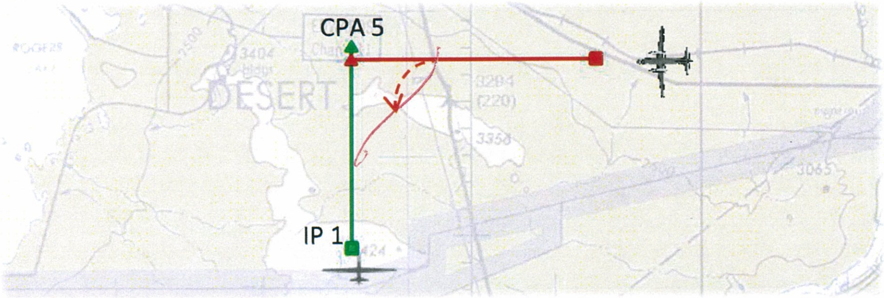
Tolerance (sec): ± 10

COMEX TIME:				IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	15000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	-1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

S

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 47	Version 9
Card# 5	**L54D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

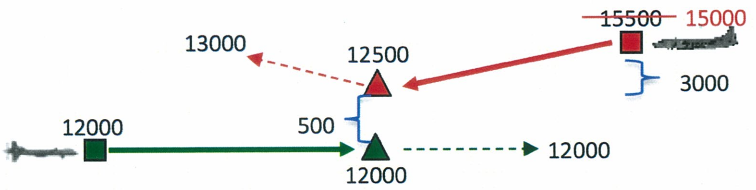
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☐ TCAS	☑ TRACKER



RT
TA B
Correcting

Tolerance (sec): ± 10

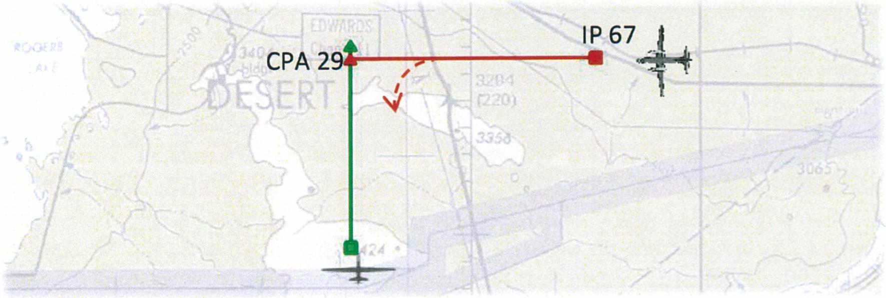
COMEX TIME: 0727

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 47	Version 9
Card#	**L54D**		Intruder 1

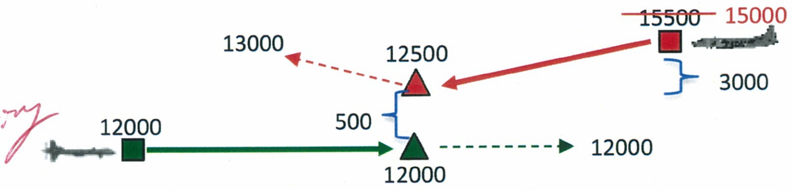


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

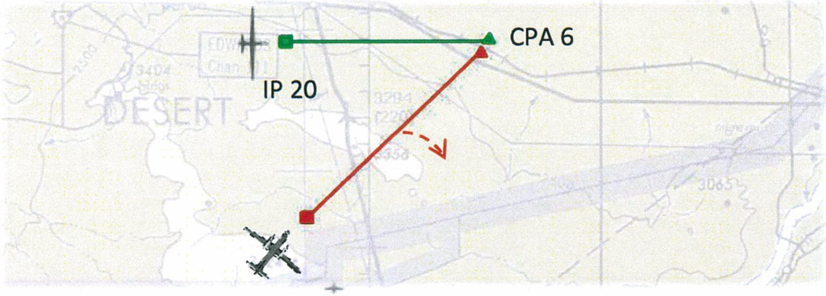
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	15000	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 69	Version 9
Card# 6	**L54F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

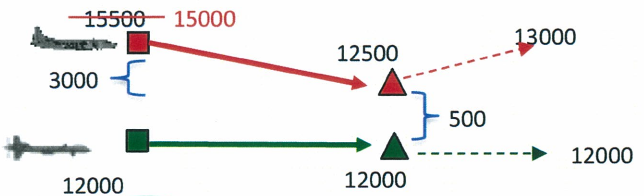
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☑ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



- LT 208
- More Left for Bands
- Terminate

Tolerance (sec): ± 10

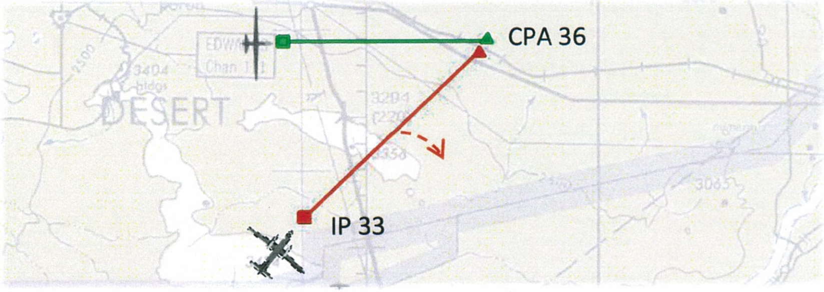
COMEX TIME: 0736

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 69	Version 9
Card#	**L54F**		Intruder 1

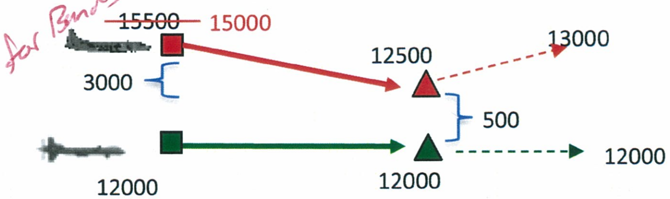


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

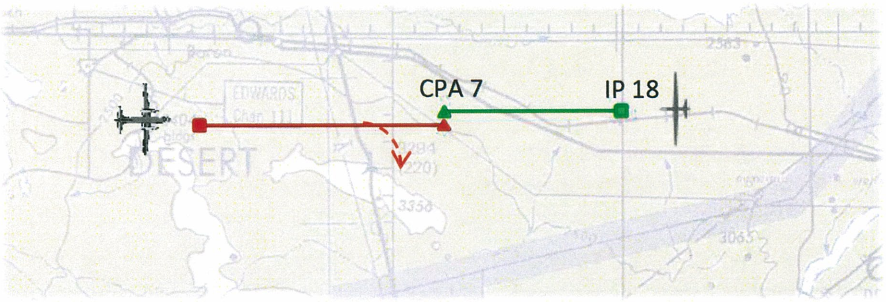
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	15000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	-1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 5	Version 9
Card# 7	**L56A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

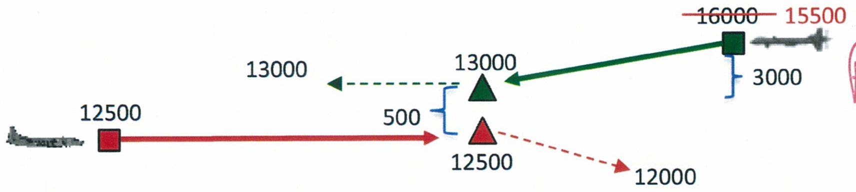
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0746

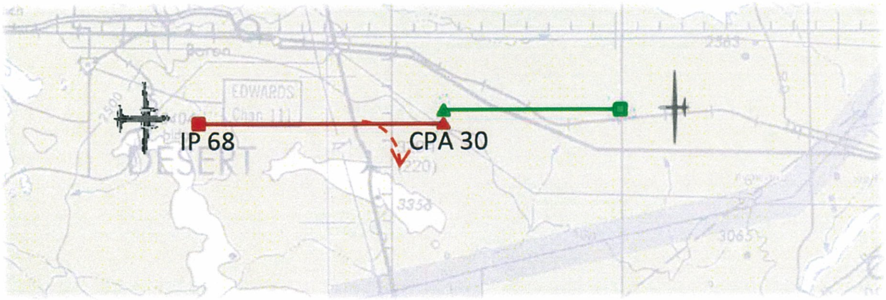
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP18	**N34° 57.09'**	**W117° 19.69'**	15500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

RT 200°
TA ③
Manuver Back to 0

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 5	Version 9
Card#	**L56A**		Intruder 1

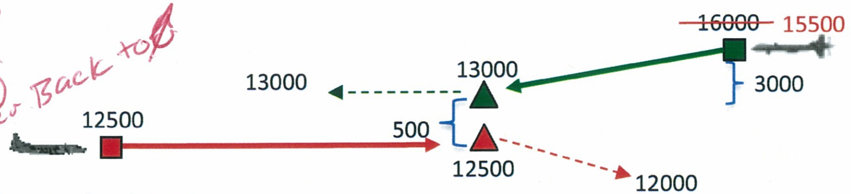


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



Tolerance (sec): ± 10

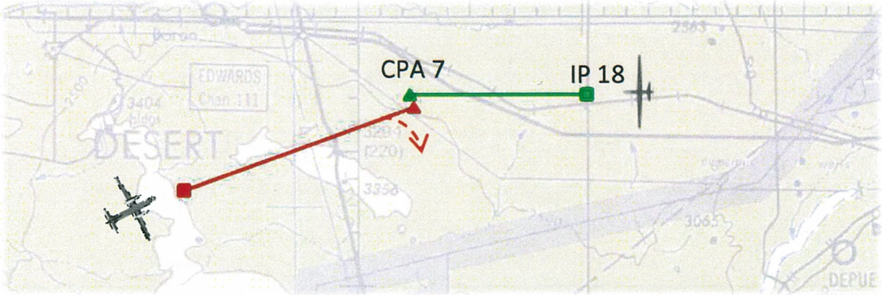
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP68	**N34° 56.60'**	**W117° 38.60'**	12500	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12500	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 6	Version 9
Card# 9	**L56B**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

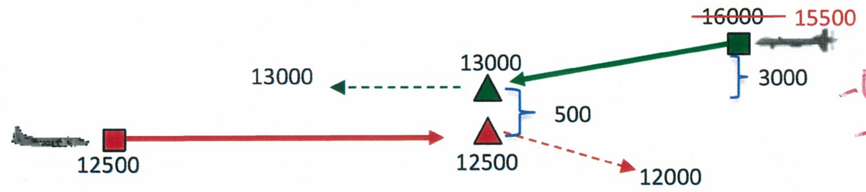
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☑ TRACKER

ABORT PROCEDURE

13000	**MAINTAIN HDG**



Tolerance (sec): ± 10

COMEX TIME: 6756

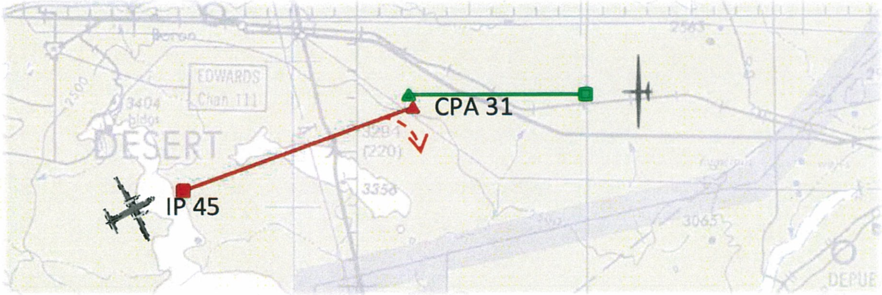
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	15500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

-LT for advisor
-TA (B)
RA (B)
B

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 6	Version 9
Card#	**L56B**		Intruder 1



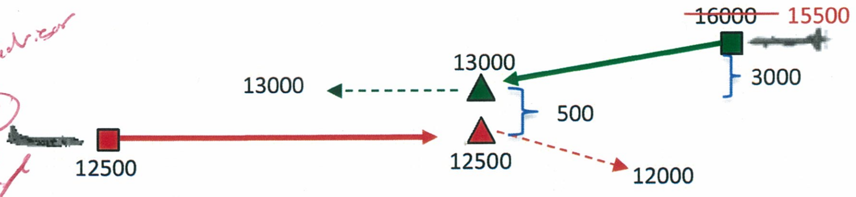
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

36C mizzed comm

12000	**120**



Tolerance (sec): ± 10

COMEX TIME:

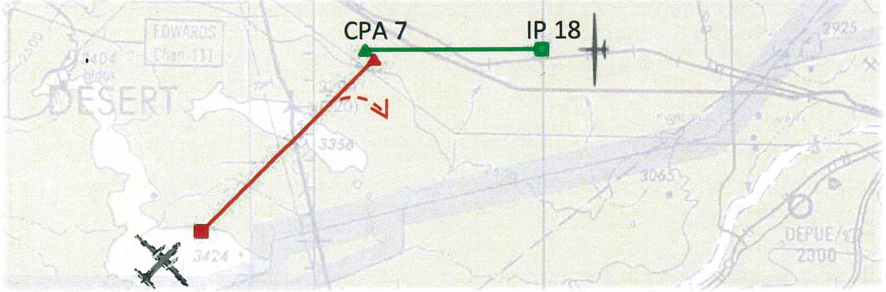
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP45	**N34° 53.55'**	**W117° 37.73'**	12500	9.0	**180**	
	N34° 53' 32.9"	**W117° 37' 43.9"**	0	058		
CPA31	**N34° 56.63'**	**W117° 27.41'**	12500	0.0	**180**	
	N34° 56' 37.6"	**W117° 27' 24.8"**	0	058		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 23	Version 9

Card# 9	L56C	Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

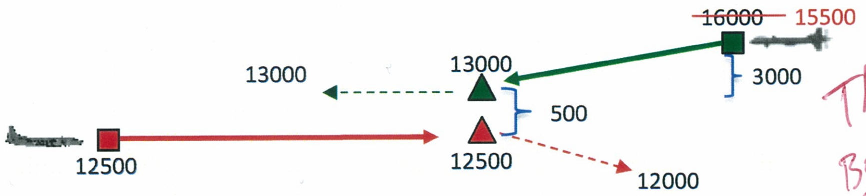
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0806	IP TIME ADJUST:				
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK

PT	LATITUDE	LONGITUDE	ALT / V/V	DIST / MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	15500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

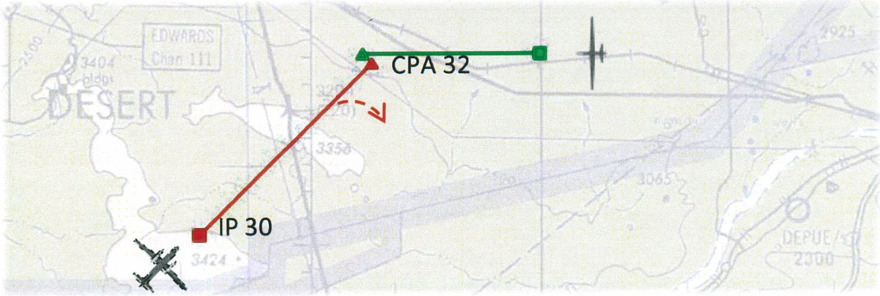
TA-B

Slightly off course

Both RA-B

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 23	Version 9

Card#	L56C	Intruder 1

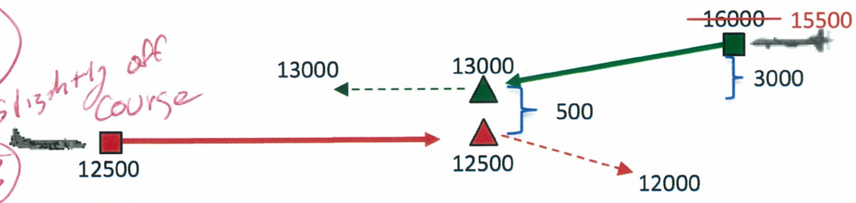


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



Tolerance (sec): ± 10

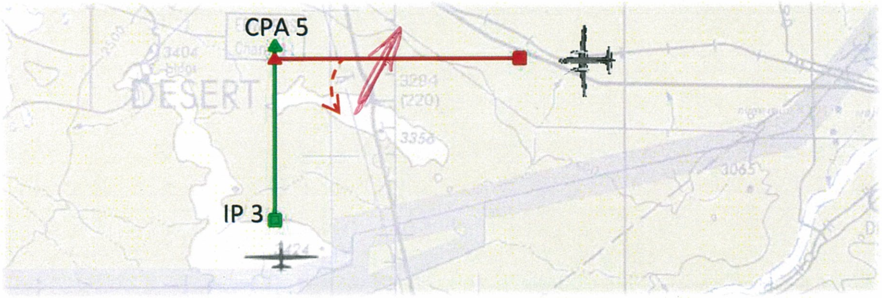
PT	LATITUDE	LONGITUDE	ALT / V/V	DIST / MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

COMEX TIME:

IP TIME ADJUST:

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 44	Version 9
Card# 10	**L56D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

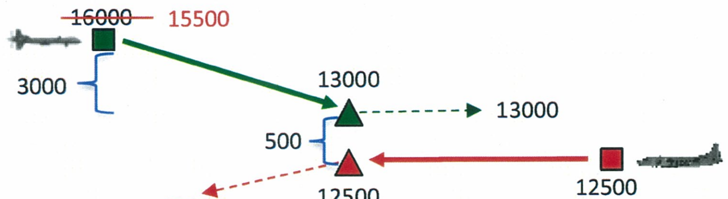
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



RT - 30°
TA ③

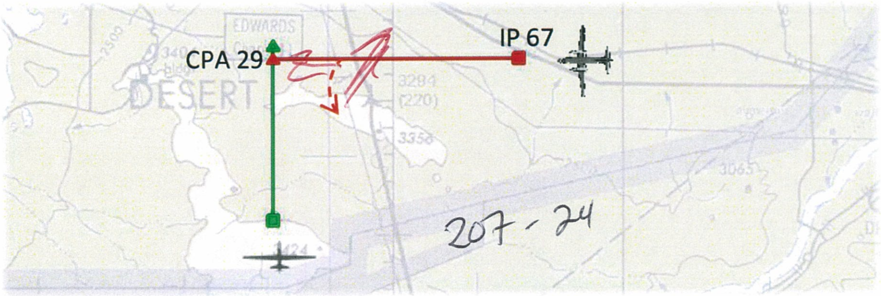
Tolerance (sec): ± 10

COMEX TIME: 0417			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP3	**N34° 50.55'**	**W117° 35.30'**	15500	6.5	**130**	
	N34° 50' 33.0"	**W117° 35' 18.0"**	-1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**130**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

split tracks

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 44	Version 9
Card#	**L56D**		Intruder 1



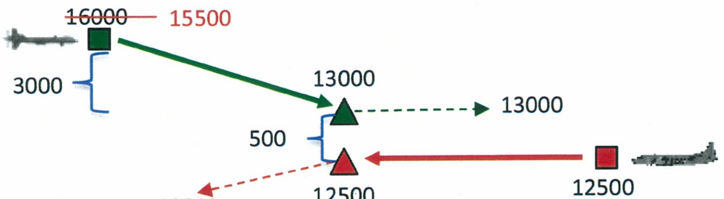
207 - 24

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**150**

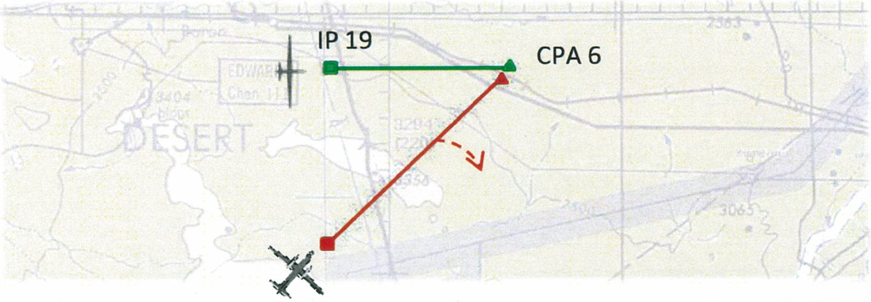


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 66	Version 9
Card# 11	**L56F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

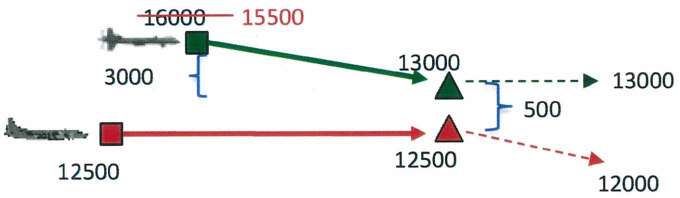
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☒ TCAS	☒ TRACKER



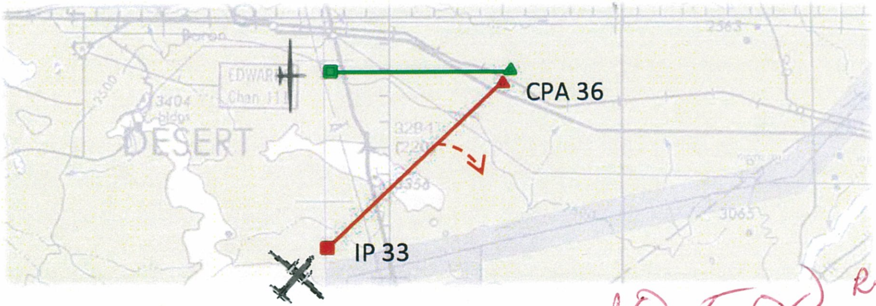
Too fast

Tolerance (sec): ± 10

COMEX TIME: 0125 // 2447			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP19	**N34° 57.89'**	**W117° 32.40'**	15500	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	-1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	13000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 66	Version 9
Card#	**L56F**		Intruder 1



10,500 Reset

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

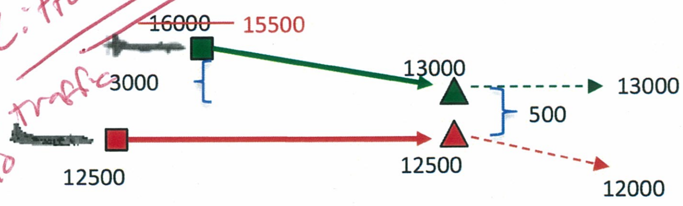
DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**

Little late

LT Coords found traffic
B: 090

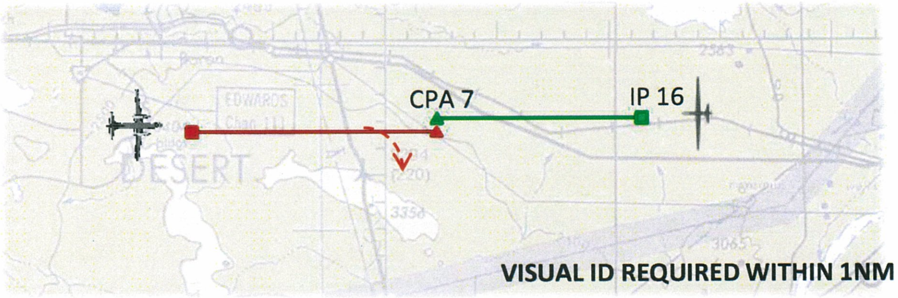


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	12500	9.0	**180** // 200	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12500	0.0	**180** // 200	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 1	Version 9
Card# 12	**L42A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

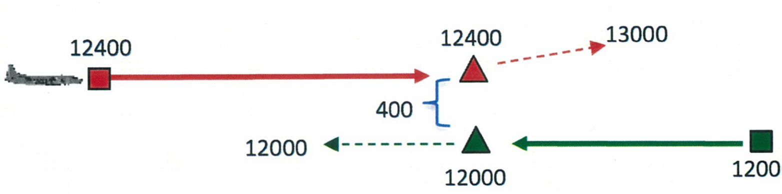
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS	☐ TRACKER



RT - 10°
TA ⑬
RA ⑬
Good

Tolerance (sec): ± 10

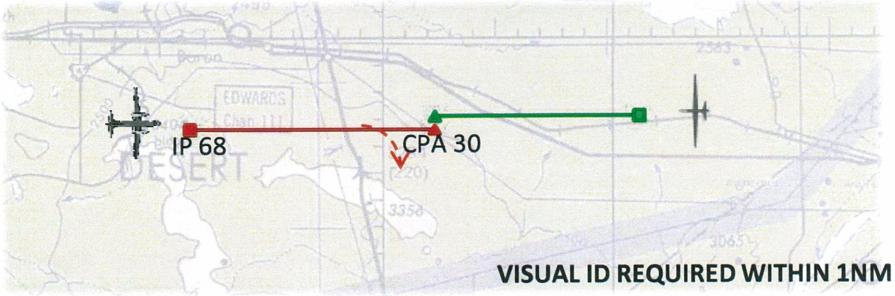
COMEX TIME: 0857

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 1	Version 9
Card#	**L42A**		Intruder 1



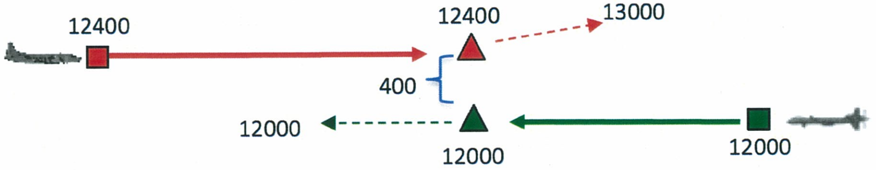
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

✓ - 12nm



Tolerance (sec): ± 10

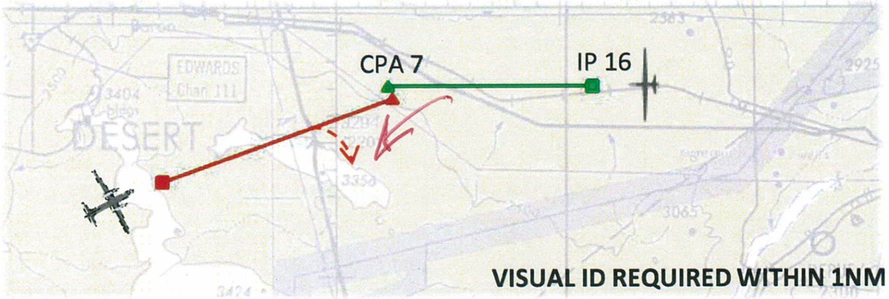
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP68	**N34° 56.60'**	**W117° 38.60'**	12400	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12400	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 2	Version 9
Card# 13	**L42B**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

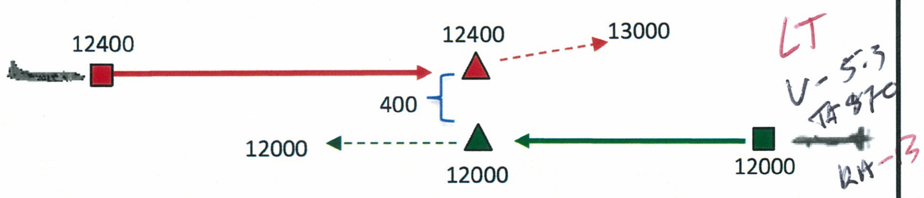
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



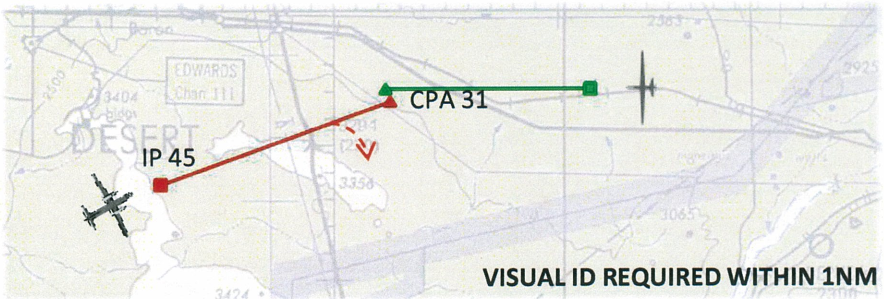
LT
V-5.3
TA 870
RA-13

Tolerance (sec): ± 10

COMEX TIME: 0905			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 2	Version 9
Card#	**L42B**		Intruder 1

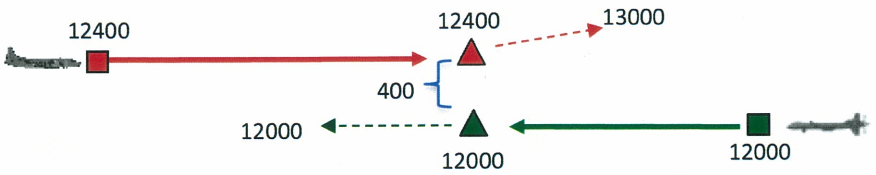


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

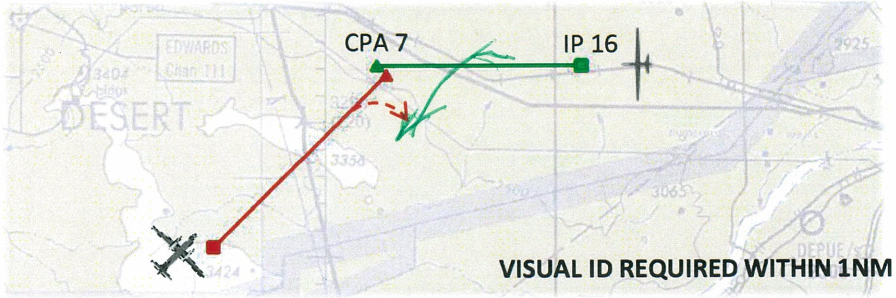


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP45	**N34° 53.55'**	**W117° 37.73'**	12400	9.0	**180**	
	N34° 53' 32.9"	**W117° 37' 43.9"**	0	058		
CPA31	**N34° 56.63'**	**W117° 27.41'**	12400	0.0	**180**	
	N34° 56' 37.6"	**W117° 27' 24.8"**	0	058		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 21	Version 9
Card# 14	**L42C**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

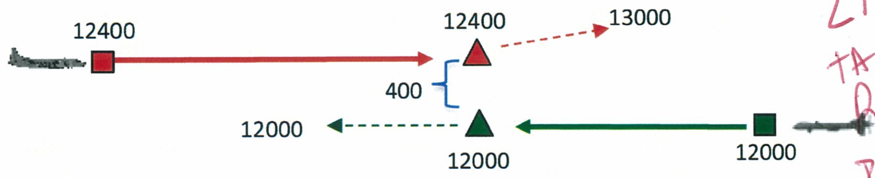
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



LT
TA B
RA B
B. B

Tolerance (sec): ± 10

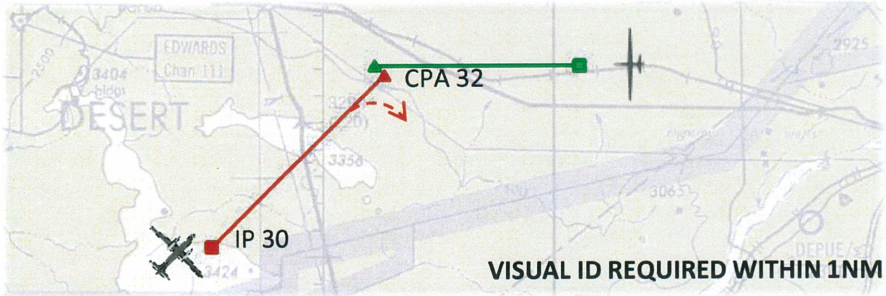
COMEX TIME: 0912

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT / V/V	DIST / MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 21	Version 9
Card#	**L42C**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

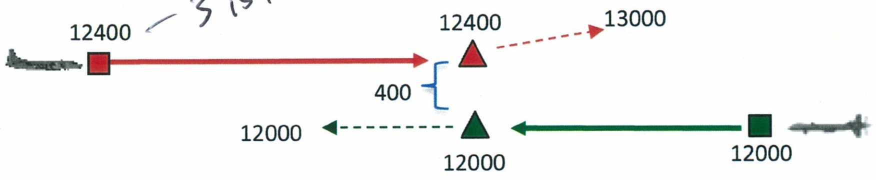
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

-8.9
-BLIND
-3 ish



Tolerance (sec): ± 10

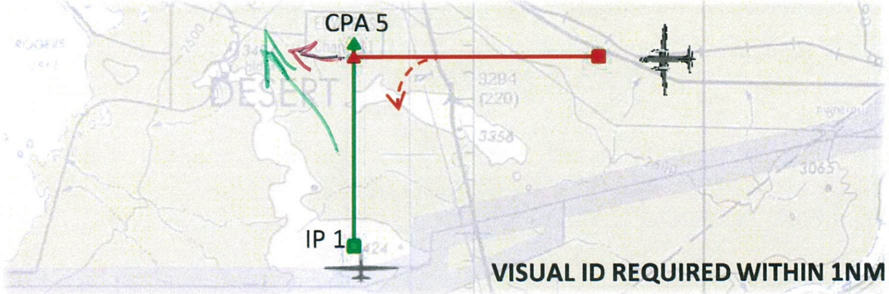
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT / V/V	DIST / MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12400	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12400	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 42	Version 9
Card# 15	**L42D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

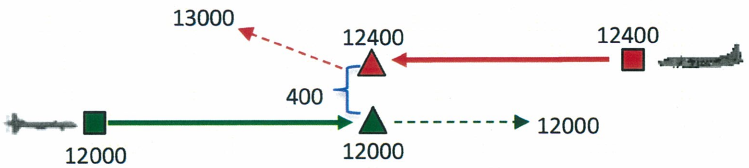
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



LT
V - 4.8nm
TA-(B)
Green Escape Bands

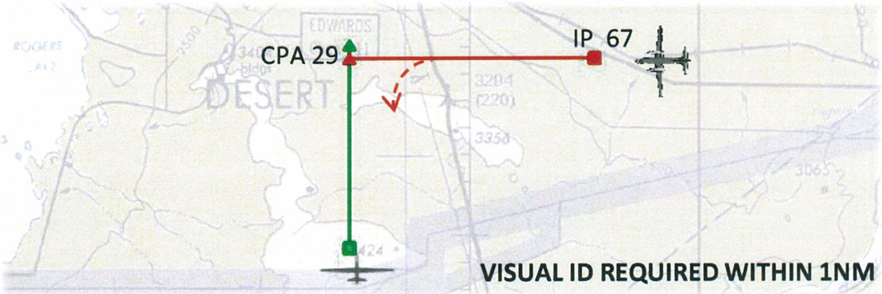
Tolerance (sec): ± 10

COMEX TIME: 0922 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 42	Version 9
Card#	**L42D**		Intruder 1

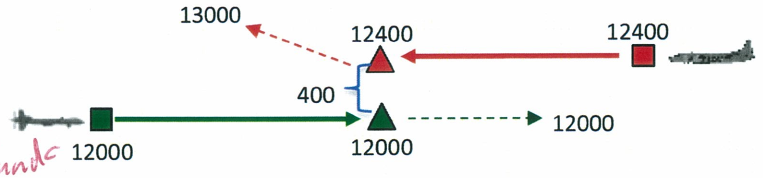


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



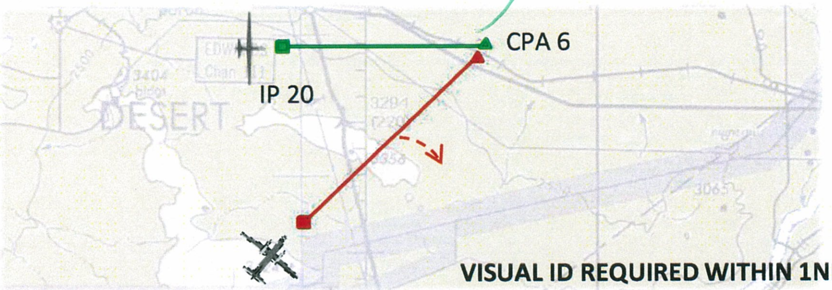
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12400	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12400	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 64	Version 9
Card# 16	**L42F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☑ TRACKER

FALSE POSITIVE?

LT

Blocked ~~too~~ Northern Border

Tolerance (sec): ± 10

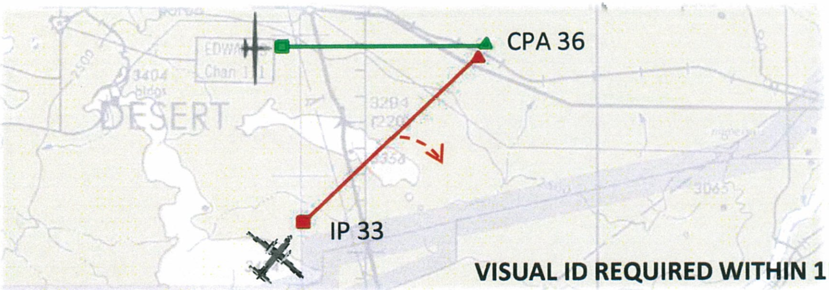
COMEX TIME: 0940

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 64	Version 9
Card#	**L42F**		Intruder 1

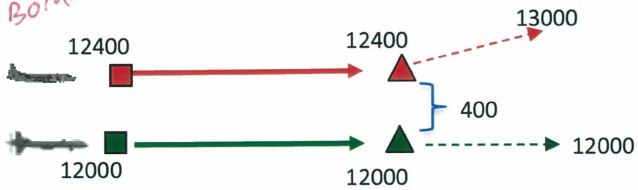


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

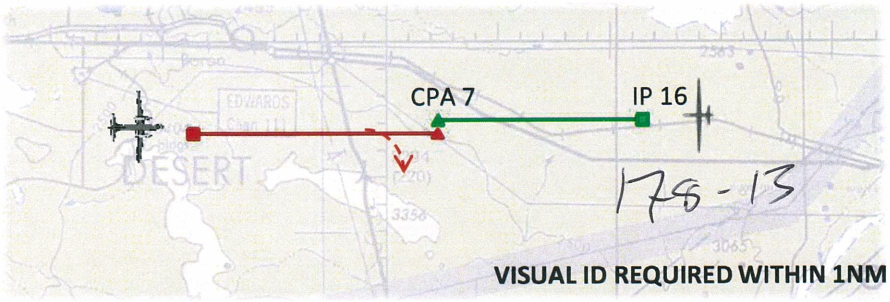
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP33	**N34° 51.18'**	**W117° 32.66'**	12400	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12400	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 20	Version 9
Card# 17	**L32A**	Ownship	



178-13

VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

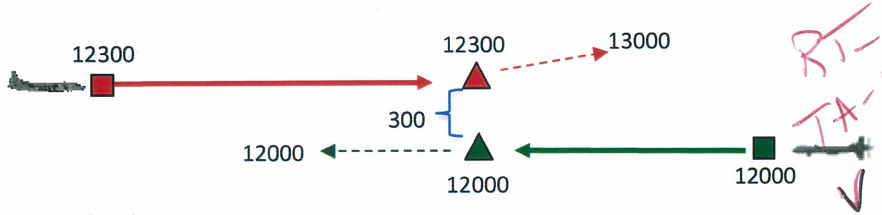
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



RT-10°
TA-13
2.5
✓

Tolerance (sec): ± 10

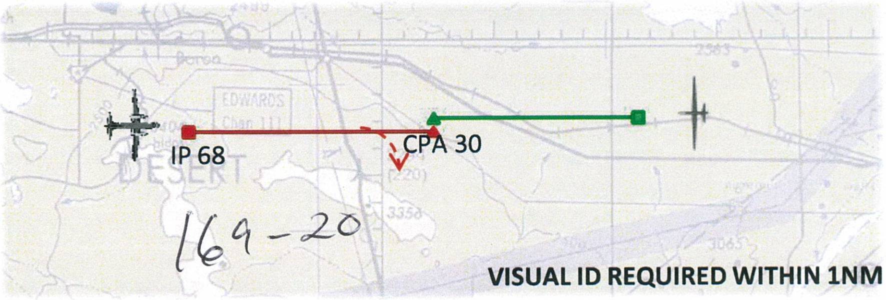
COMEX TIME: 0950

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 20	Version 9
Card#	**L32A**	Intruder 1	



169-20

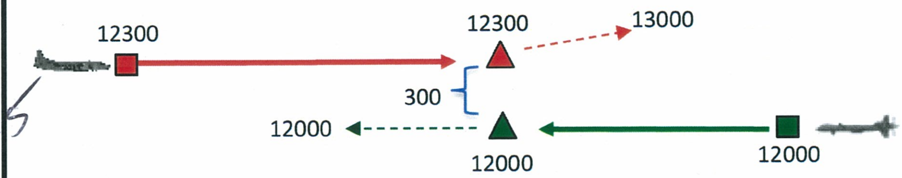
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

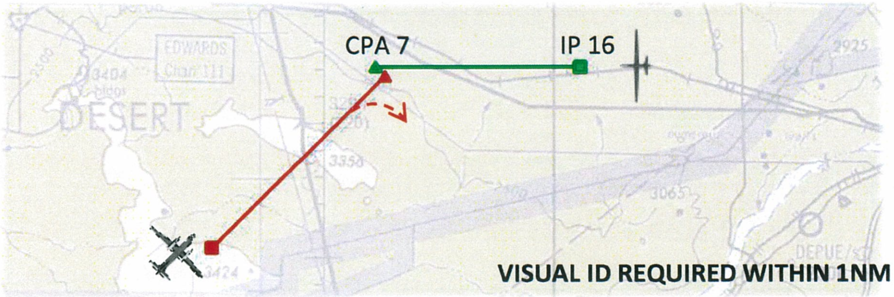
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	12300	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	12300	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 31	Version 9
Card# 18	**L32C**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 9

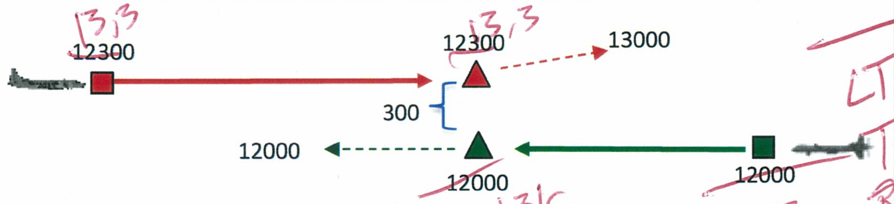
DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000 13,000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☐ TRACKER

13,000



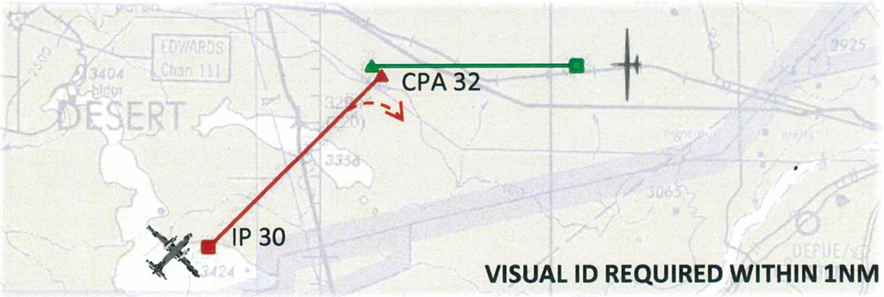
Tolerance (sec): ± 8

COMEX TIME: 1005	IP TIME ADJUST:				

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 31	Version 9
Card#	**L32C**		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

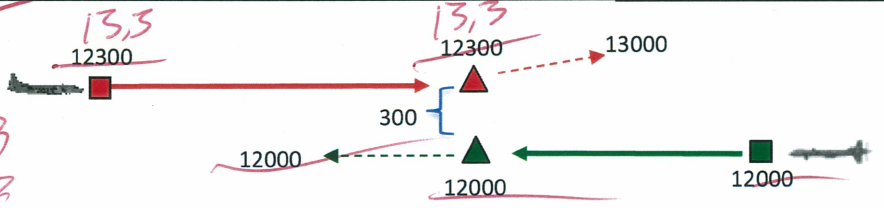
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

0+45 time Remaining

ABORT PROCEDURE

14000 ~~**13000**~~	**120**



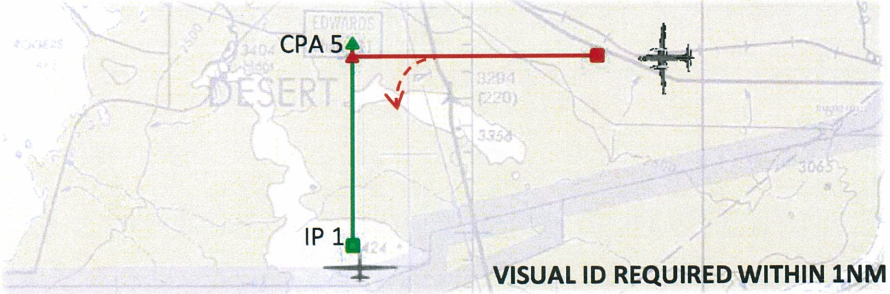
Tolerance (sec): ± 8

COMEX TIME:	IP TIME ADJUST:				

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12300	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12300	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 51	Version 9
Card# 19	**L32D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

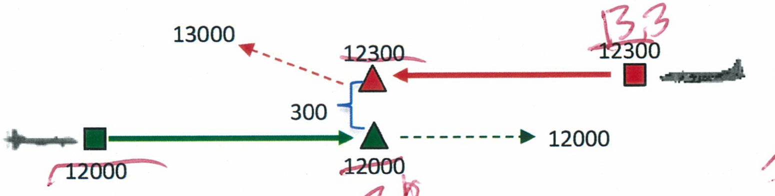
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
~~12000~~ 13

ABORT PROCEDURE

~~12000~~ 13	MAINTAIN HDG

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS	☐ TRACKER



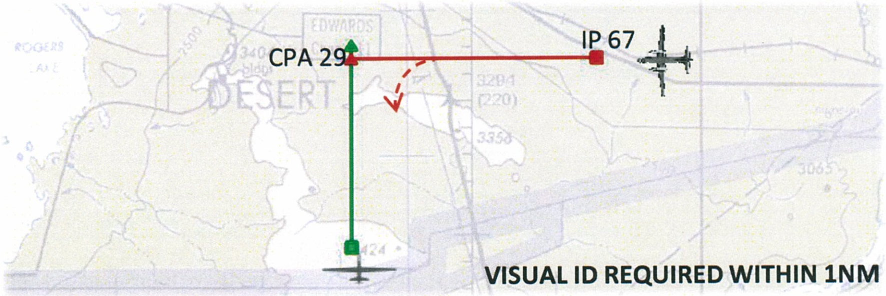
Tolerance (sec): ± 5

COMEX TIME: 1015

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
			IP TIME ADJUST:			
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 51	Version 9
Card#	**L32D**		Intruder 1

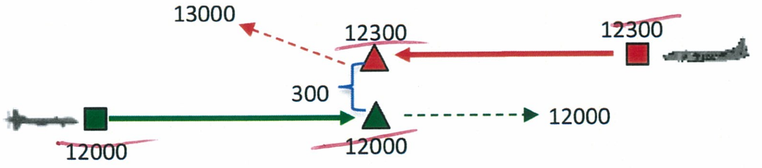


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14 ~~13000~~

ABORT PROCEDURE

14 ~~13000~~	150



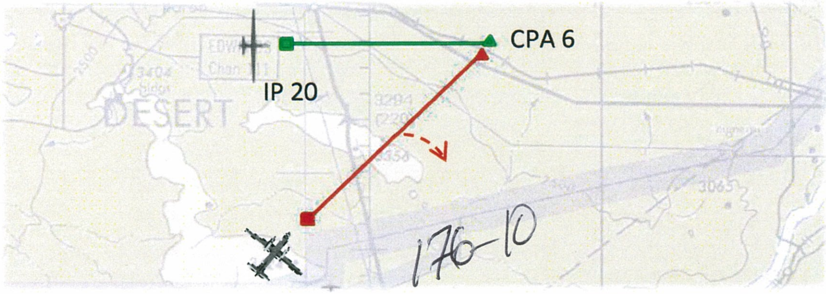
Tolerance (sec): ± 5

COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
			IP TIME ADJUST:			
IP67	**N34° 56.56'**	**W117° 24.32'**	12300	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12300	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 68	Version 9
Card# 28	**L53F**		Ownship



176-10

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

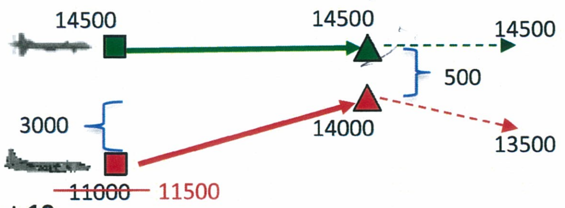
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☒ ADS-B ☑ RADAR ☑ TCAS ☒ TRACKER



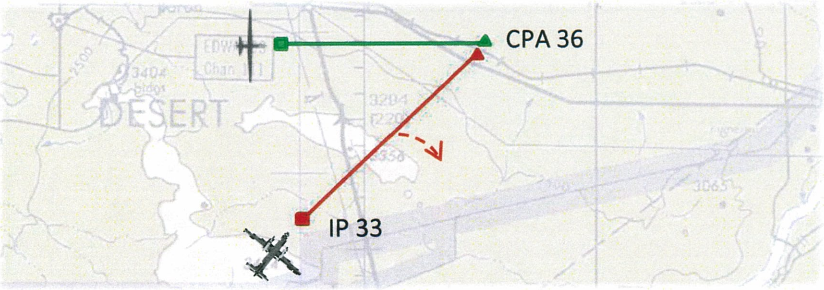
LT Terminat Border

Tolerance (sec): ± 10

COMEX TIME:	1027		IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	14500	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14500	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 68	Version 9
Card#	**L53F**		Intruder 1



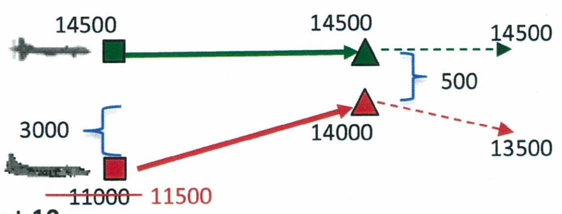
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

Block 10-20K

ABORT PROCEDURE

13500	**120**

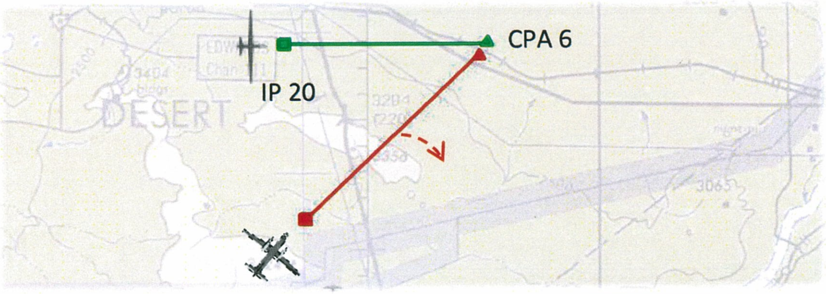


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	11500	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14000	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 69	Version 9
Card# 21	**L54F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

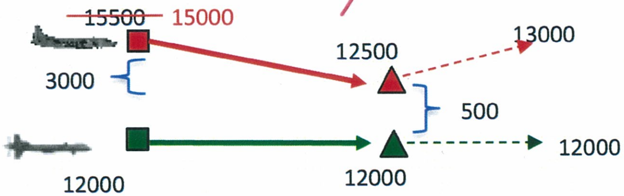
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☒ TRACKER



Tolerance (sec): ± 10

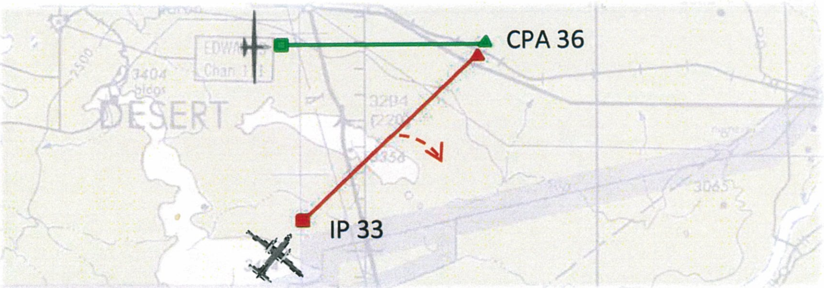
COMEX TIME: 1037

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 69	Version 9
Card#	**L54F**		Intruder 1



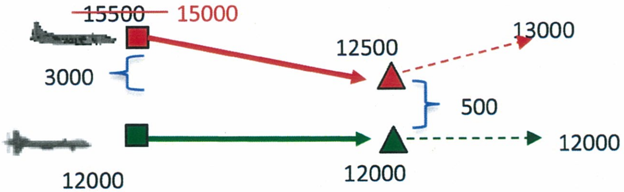
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

Deviate North authorized



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	15000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	-1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

12.7 Flight 7 Redlined Flight Cards

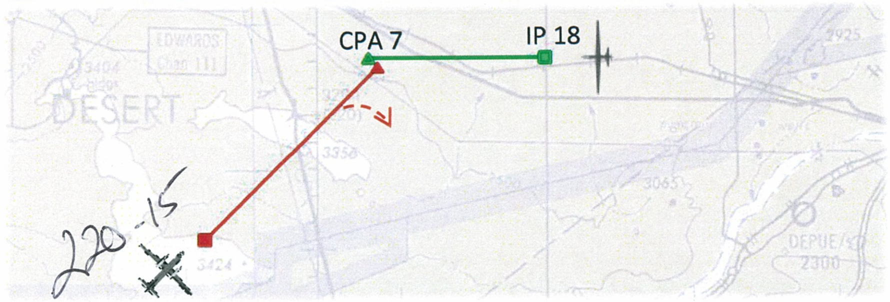
20150709

Order of Cards
Flight 7

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC	
1	22 - L55C	1	Stratway+	Follow Stratway+ Display	N3GC	
2	43 - L55D	1		Follow Stratway+ Display	N3GC	
3	65 - L55F	1		Follow Stratway+ Display	N3GC	
4	24 - L57C	1		Follow Stratway+ Display	N3GC	
5	45 - L57D	1		Follow Stratway+ Display	N3GC	
6	67 - L57F	1		Follow Stratway+ Display	N3GC	
7	7 - L57A	1		Follow Stratway+ Display	N3GC	
8	3 - L55A	1		Follow Stratway+ Display	N3GC	
9	4 - L55B	1		Follow Stratway+ Display	N3GC	
10	21 - L42C	2		Follow Stratway+ Display	N3GC	
11	42 - L42D	2		Follow Stratway+ Display	N3GC	
12	64 - L42F	2		Follow Stratway+ Display	N3GC	
13	26 - L54C	2		Follow Stratway+ Display	N3GC	
14	47 - L54D	2		Follow Stratway+ Display	N3GC	
15	22 - L55C	2		Follow Stratway+ Display	N3GC	
16	43 - L55D	2		Follow Stratway+ Display	N3GC	
17	65 - L55F	2		Follow Stratway+ Display	N3GC	
18	24 - L57C	2		Follow Stratway+ Display	N3GC	
19	45 - L57D	2		Follow Stratway+ Display	N3GC	
20	67 - L57F	2		Follow Stratway+ Display	N3GC	
21	25 - L53C	2		Follow Stratway+ Display	N3GC	
22	46 - L53D	2		Follow Stratway+ Display	N3GC	
		2	CPDS Display	None - Fly Through	N3GC	110°
		3		None - Fly Through	N3GC	110°
		3		None - Fly Through	N3GC	110°
		3		None - Fly Through	N3GC	90°
		3		None - Fly Through	N3GC	90°

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 22	Version 9
Card# 1	**L55C**		Ownship



220-15

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

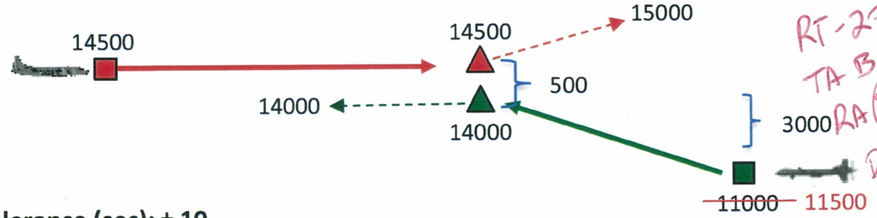
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☐ TRACKER



RT-275
TA B
RA Ⓑ - Directive Descend

Tolerance (sec): ± 10

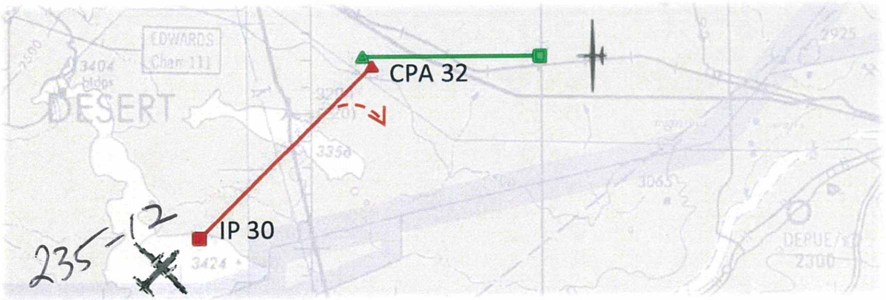
COMEX TIME: 6653

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	11500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 22	Version 9
Card#	**L55C**		Intruder 1



235-12

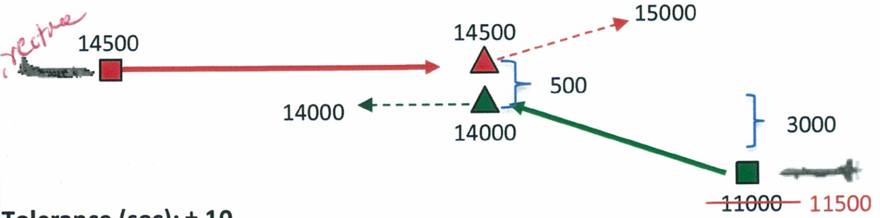
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**

Climb



Tolerance (sec): ± 10

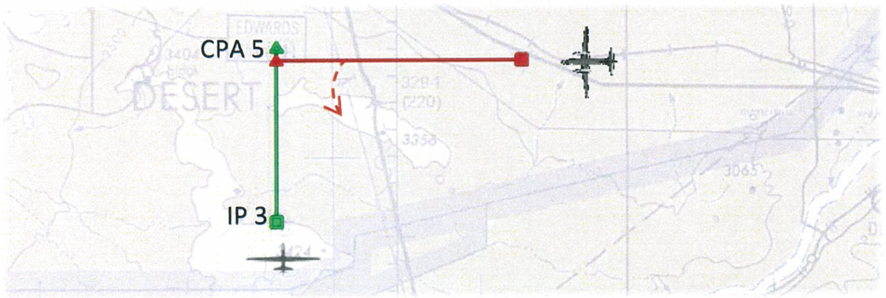
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	14500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 43	Version 9
Card# 2	L55D		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

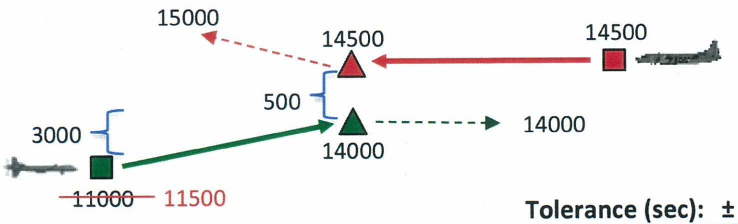
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



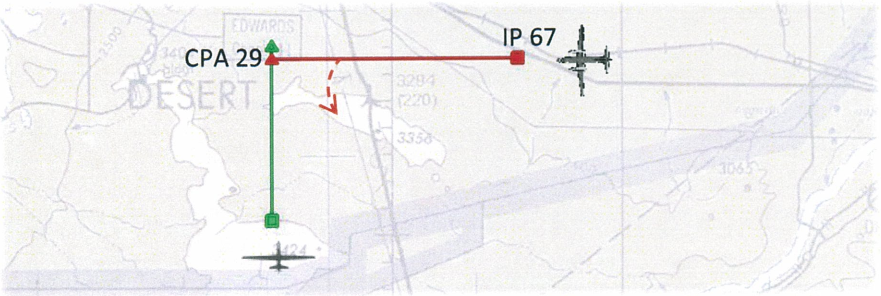
Tolerance (sec): ± 10

COMEX TIME: 0703			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP3	**N34° 50.55'**	**W117° 35.30'**	11500	6.5	**130**	
	N34° 50' 33.0"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14000	0.0	**130**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

RT-050
LT- Resume Seems late

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 43	Version 9
Card#	L55D		Intruder 1

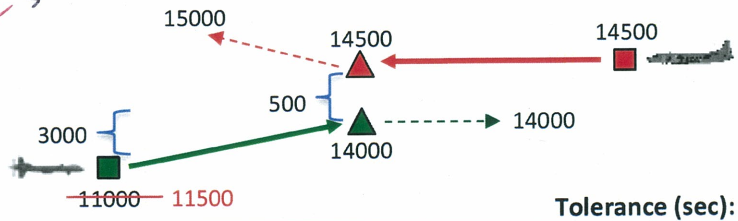


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**150**

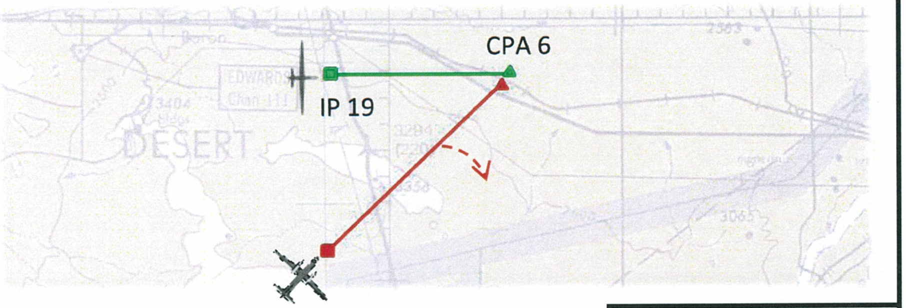


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	14500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 65	Version 9
Card# 3	**L55F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

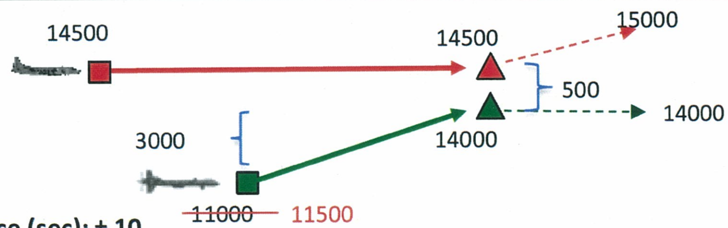
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000 ~~11000~~

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER



LT-060 N 040
C LT-
Spill north
Term

Tolerance (sec): ± 10

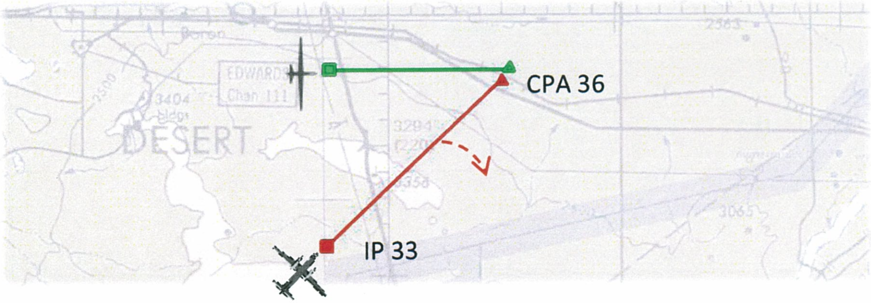
COMEX TIME: 0713

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP19	**N34° 57.89'**	**W117° 32.40'**	11500	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 65	Version 9
Card#	**L55F**		Intruder 1



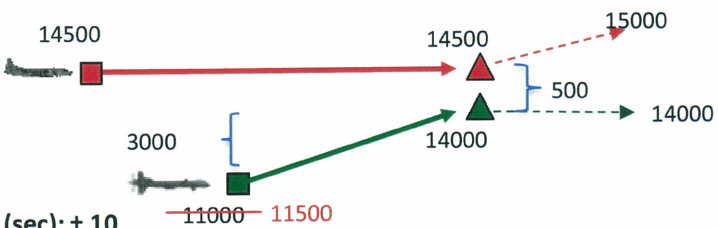
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000 ~~12000~~

ABORT PROCEDURE

15000	**120**

Slow 10 kts
Resume 180 kts



Tolerance (sec): ± 10

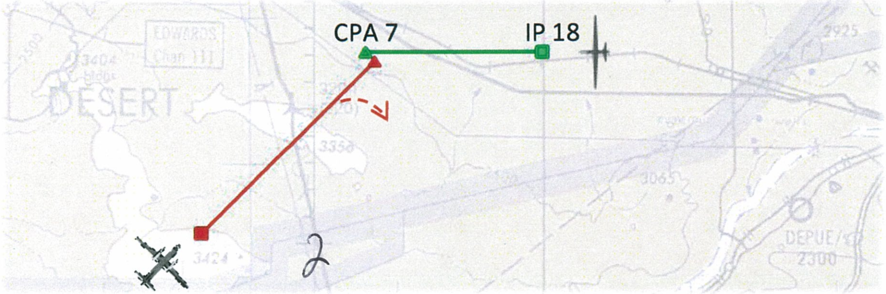
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP33	**N34° 51.18'**	**W117° 32.66'**	14500	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 24	Version 9
Card# 4	L57C		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

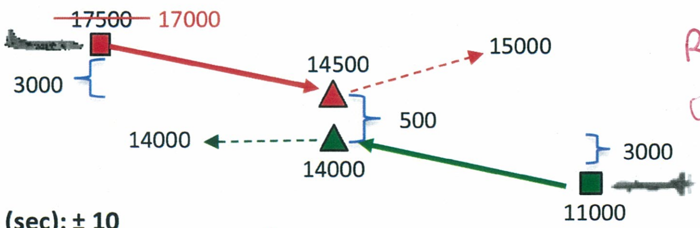
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

$\overline{14000}$	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☐ TRACKER



RT 265
Cont 280
TA-B
TA-360

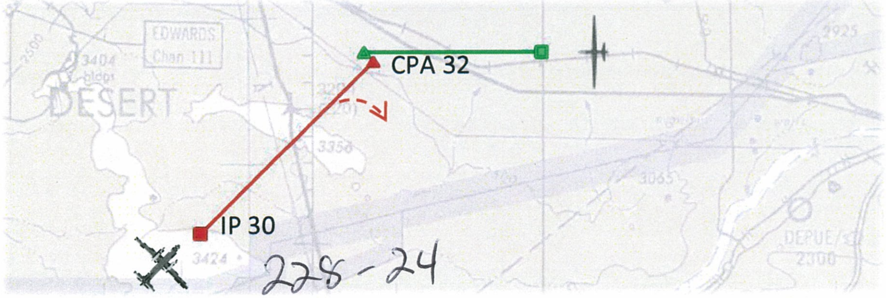
Tolerance (sec): ± 10

COMEX TIME: 6725	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP18	**N34° 57.09'**	**W117° 19.69'**	11000	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 24	Version 9
Card#	L57C		Intruder 1

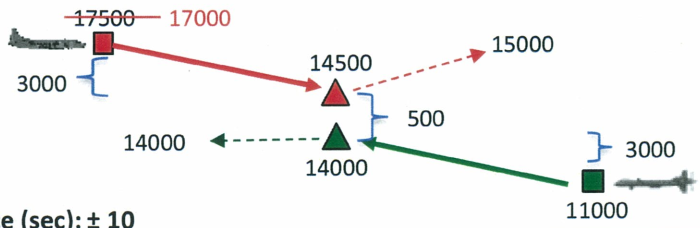


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

$\underline{15000}$	**120**



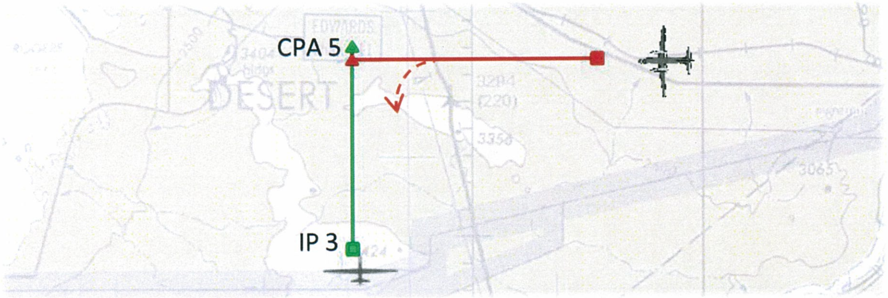
Tolerance (sec): ± 10

COMEX TIME:	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	17000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	-1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 45	Version 9
Card# 5	**L57D**	Ownship	



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

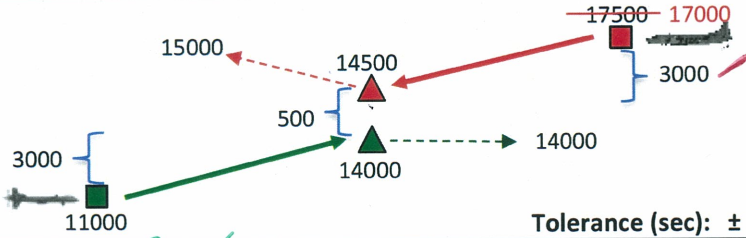
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14000

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER

ABORT PROCEDURE

14000	**MAINTAIN HDG**



False positive
CT 330 → 320 → 310
TA-B
RDR only beyond FOR

Tolerance (sec): ± 10

COMEX TIME: 0735

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP3	**N34° 50.55'**	**W117° 35.30'**	11000	6.5	**130**	
	N34° 50' 33.0"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14000	0.0	**130**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

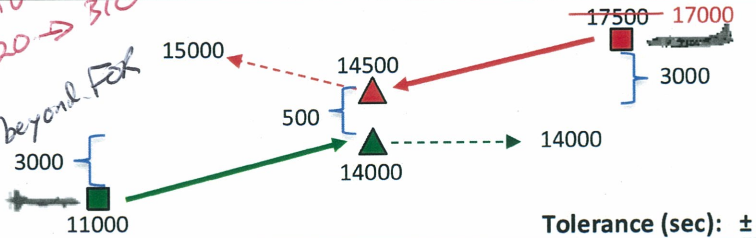
FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 45	Version 9
Card#	**L57D**	Intruder 1	

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**150**



Tolerance (sec): ± 10

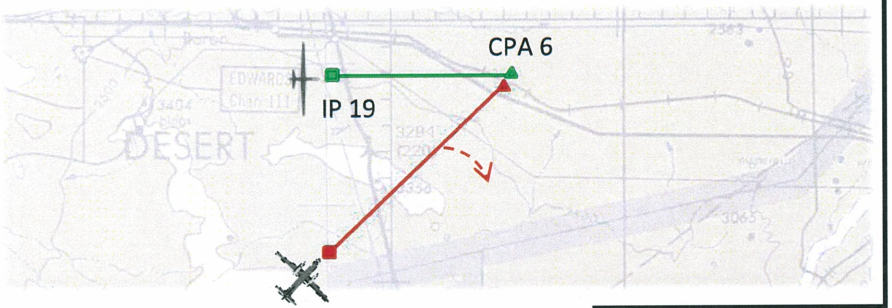
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP67	**N34° 56.56'**	**W117° 24.32'**	17000	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 67	Version 9
Card# 6	**L57F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

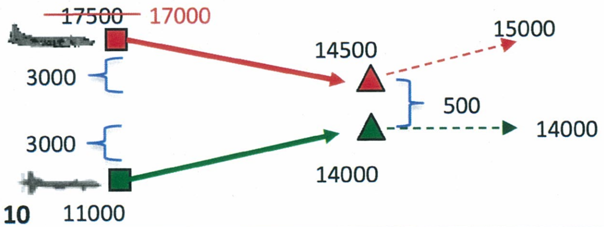
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



LT-060-030
Parallel

Tolerance (sec): ± 10

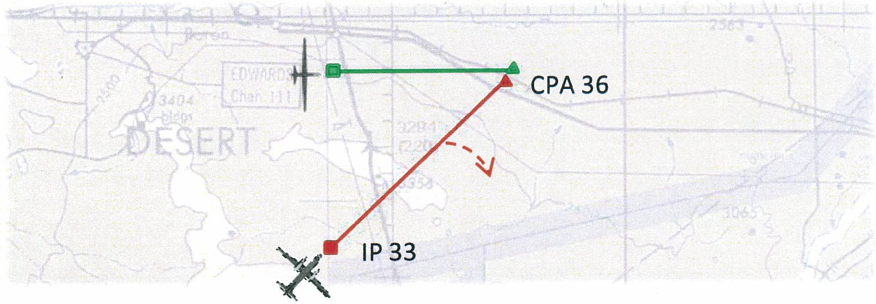
COMEX TIME: 0743

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP19	**N34° 57.89'**	**W117° 32.40'**	11000	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 67	Version 9
Card#	**L57F**		Intruder 1

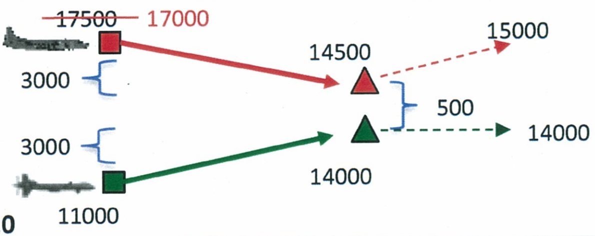


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



Tolerance (sec): ± 10

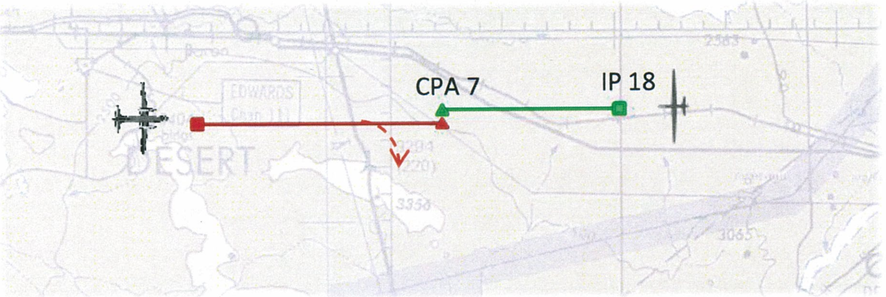
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP33	**N34° 51.18'**	**W117° 32.66'**	17000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	-1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 7	Version 9
Card# 7	**L57A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

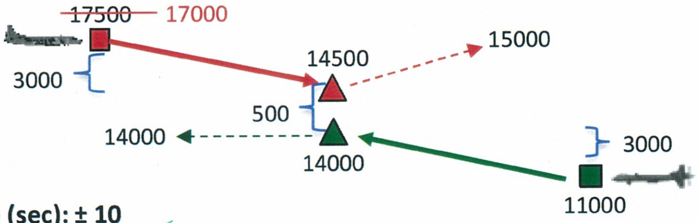
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☑ TCAS
			☑ TRACKER



RT270 → 280
TA, 3
Held off on Term

Tolerance (sec): ± 10

COMEX TIME: 0755

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP18	**N34° 57.09'**	**W117° 19.69'**	11000	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

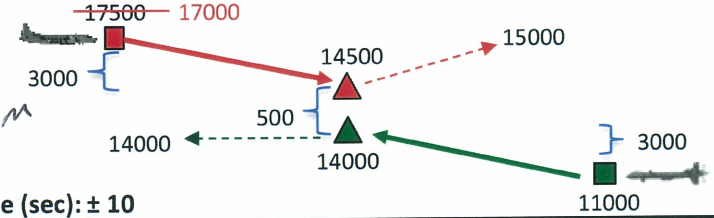
FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 7	Version 9
Card#	**L57A**		Intruder 1

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



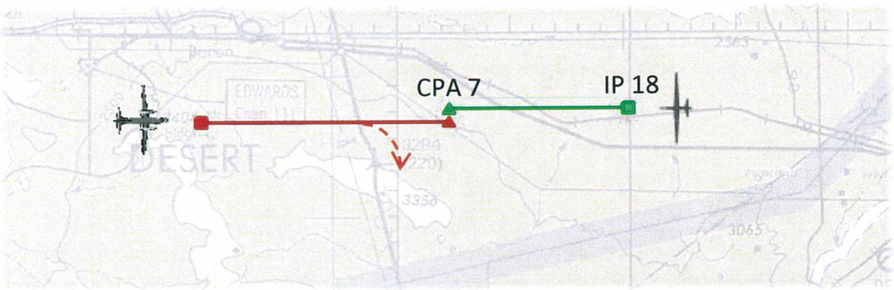
Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP68	**N34° 56.60'**	**W117° 38.60'**	17000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	-1000	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	14500	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 3	Version 9
Card# 8	**L55A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

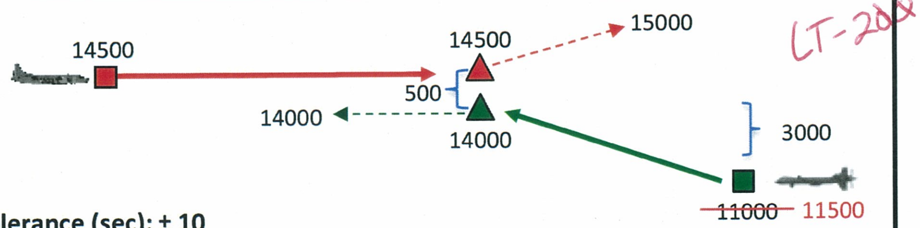
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



LT-200

Tolerance (sec): ± 10

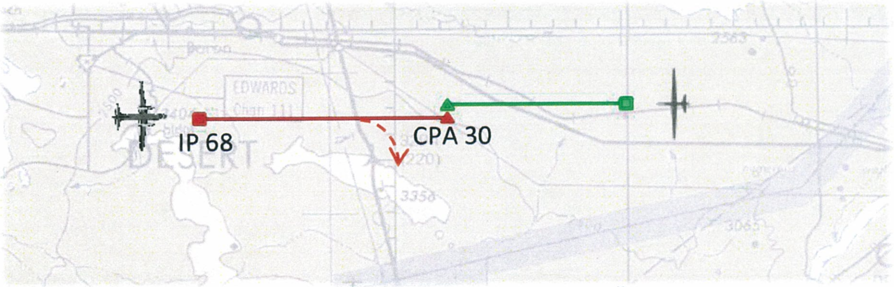
COMEX TIME: 0807

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	11500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 3	Version 9
Card#	**L55A**		Intruder 1

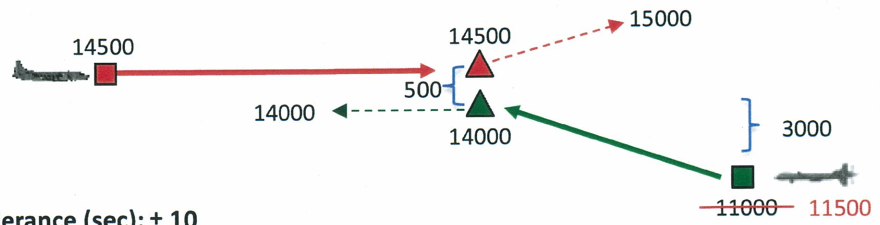


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



Tolerance (sec): ± 10

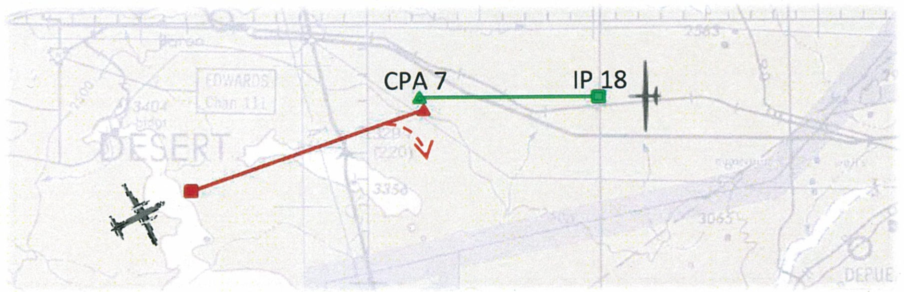
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	14500	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	14500	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 4	Version 9
Card# 9	**L55B**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

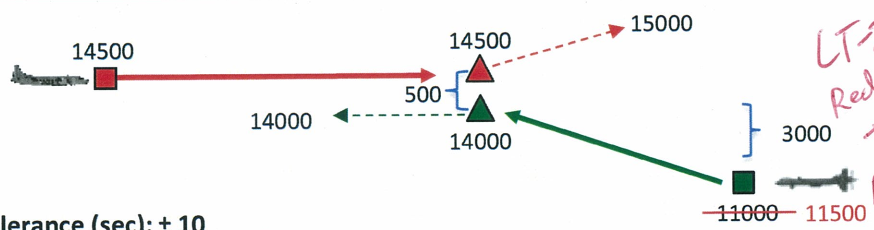
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☑ TCAS	☐ TRACKER



LT-205
Red Blinky Doo
TA-Ⓑ
RTB Ø

Tolerance (sec): ± 10

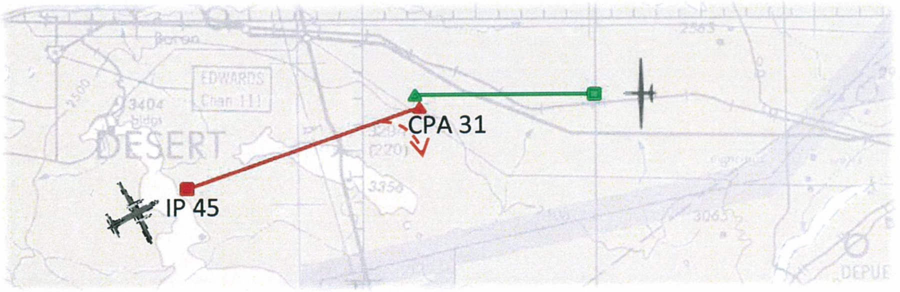
COMEX TIME: 0614

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	11500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 4	Version 9
Card#	**L55B**		Intruder 1



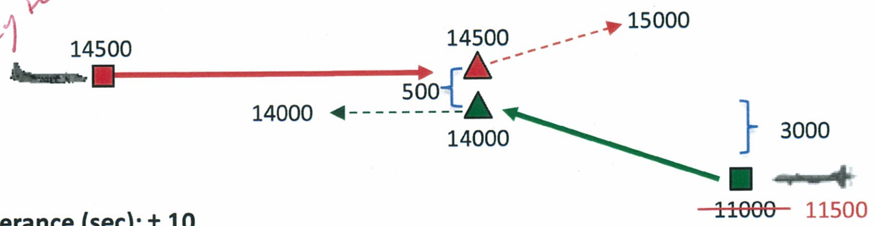
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**

TCAS False alarm



Tolerance (sec): ± 10

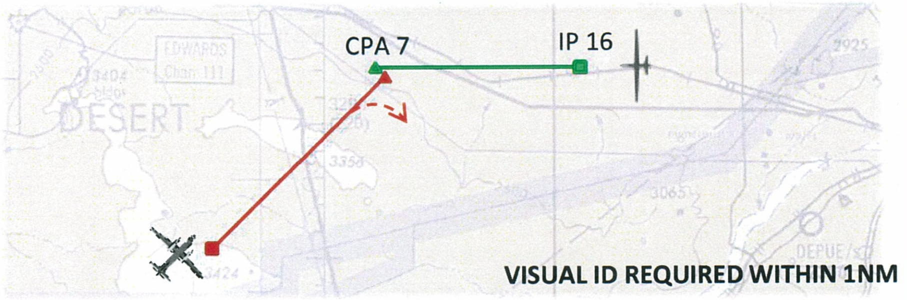
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP45	**N34° 53.55'**	**W117° 37.73'**	14500	9.0	**180**	
	N34° 53' 32.9"	**W117° 37' 43.9"**	0	058		
CPA31	**N34° 56.63'**	**W117° 27.41'**	14500	0.0	**180**	
	N34° 56' 37.6"	**W117° 27' 24.8"**	0	058		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 21	Version 9
Card# 10	**L42C**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

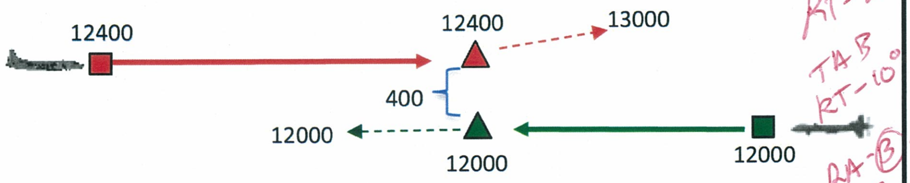
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	MAINTAIN HDG

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



RT-260
TA B
RT-10°
RA-B-Descriptive
Ø

Tolerance (sec): ± 10

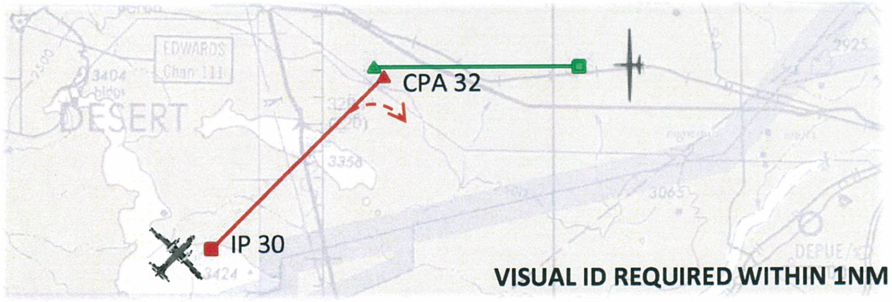
COMEX TIME: 0830

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 21	Version 9
Card#	**L42C**		Intruder 1



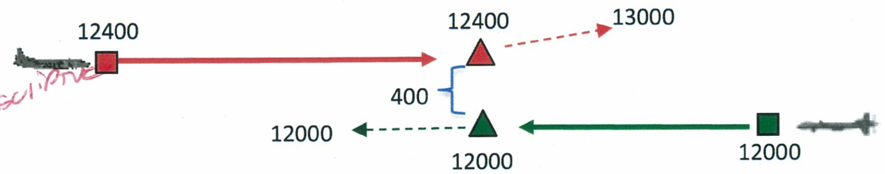
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	120



Tolerance (sec): ± 10

COMEX TIME:

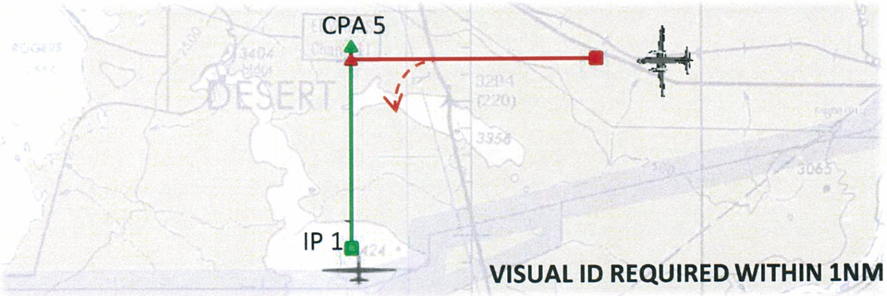
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12400	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12400	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 42	Version 9

Card# 11	**L42D**	Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

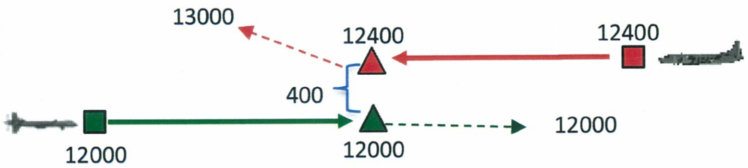
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



LT330
V-5.5
RT-350
A-B
B-C

Tolerance (sec): ± 10

COMEX TIME: 0340

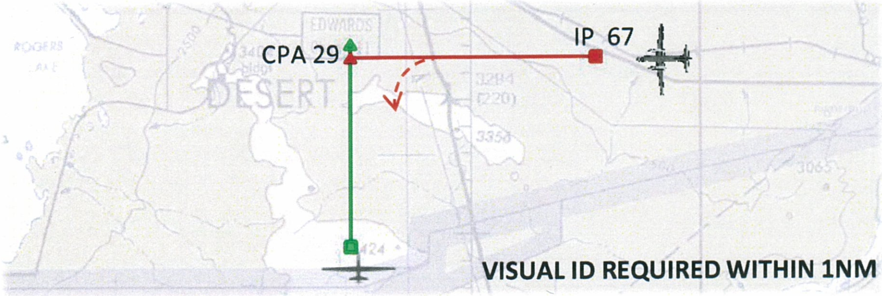
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 42	Version 9

Card#	**L42D**	Intruder 1

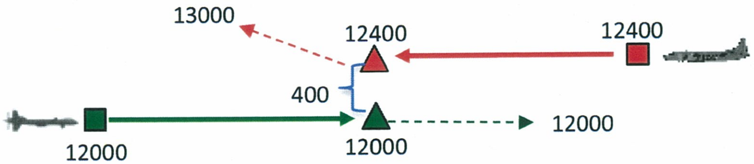


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

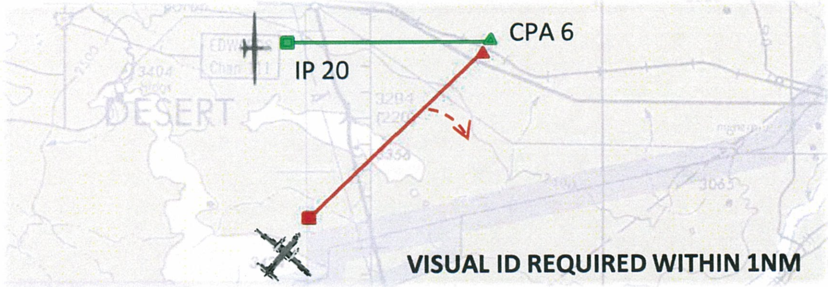
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP67	**N34° 56.56'**	**W117° 24.32'**	12400	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12400	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 64	Version 9
Card# 12	**L42F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

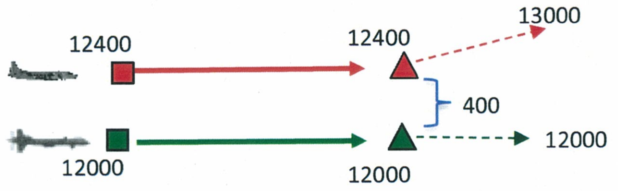
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1
☐ AR 2
☑ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☑ RADAR
☑ TCAS
☑ TRACKER



RT-130
TA-⑮
v.29
LT

Tolerance (sec): ± 10

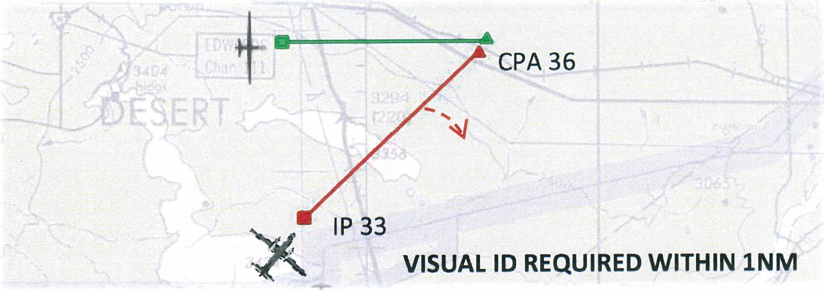
COMEX TIME: 0048

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 64	Version 9
Card#	**L42F**		Intruder 1

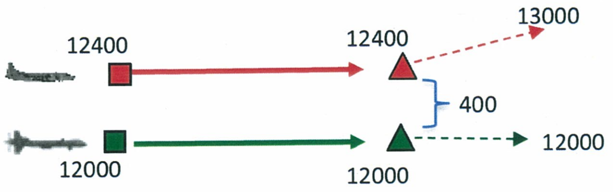


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

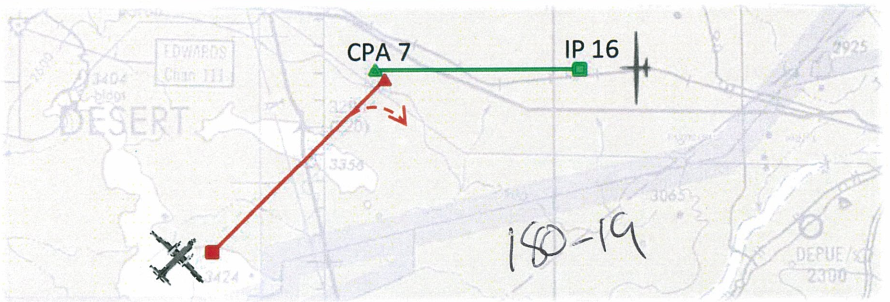
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP33	**N34° 51.18'**	**W117° 32.66'**	12400	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12400	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 26	Version 9
Card# 13	**L54C**		Ownship



180-19

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

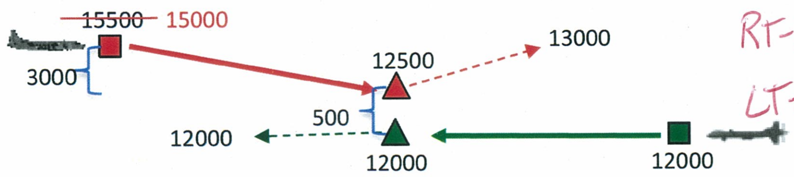
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



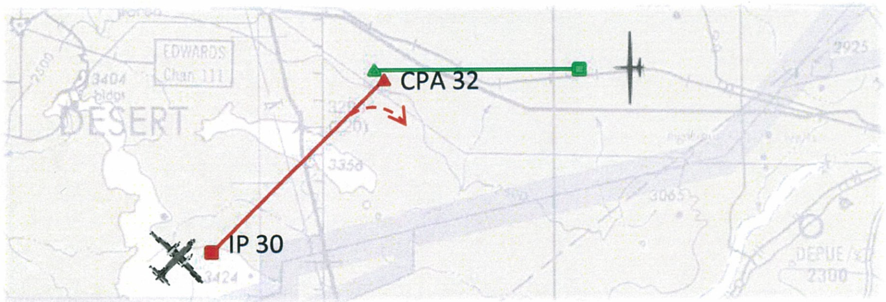
RT-285
LT-60

Tolerance (sec): ± 10

COMEX TIME: 0900			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 26	Version 9
Card#	**L54C**		Intruder 1

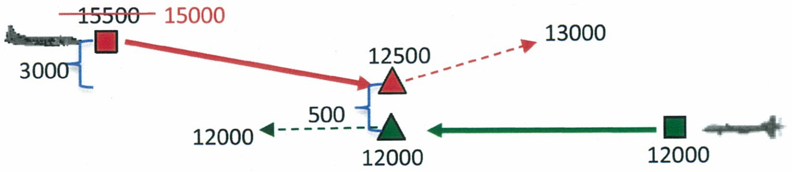


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	120

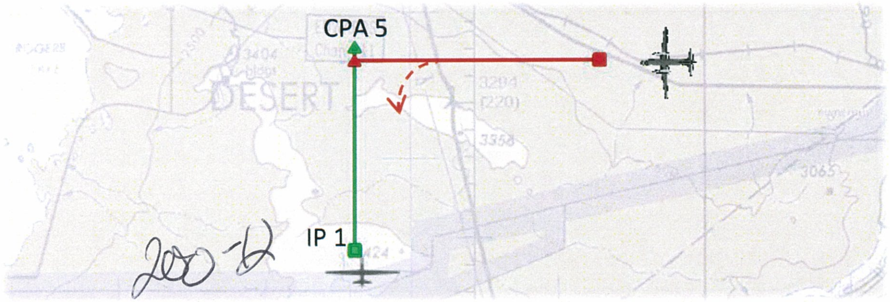


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	15000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	-1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 47	Version 9
Card# 14	**L54D**		Ownship



200-12

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 10

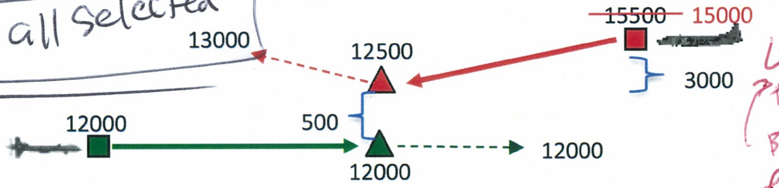
DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☒ ADS-B ☑ RADAR ☒ TCAS ☒ TRACKER

#2 all selected



LT-230
TA (B)
BØ overlap
RA-(B)

Tolerance (sec): ± 10

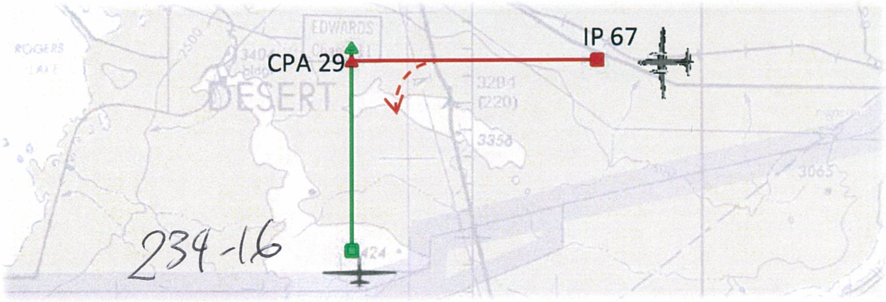
COMEX TIME: 0904 // 0920

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	RT-050
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	TA-(B)
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		LT BØ

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 47	Version 9
Card#	**L54D**		Intruder 1



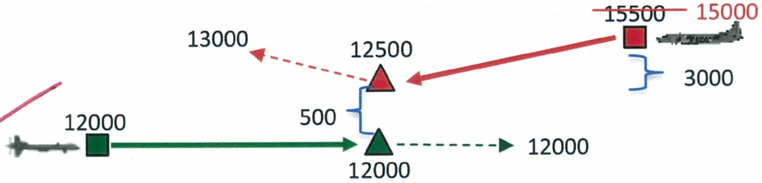
234-16

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	15000	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

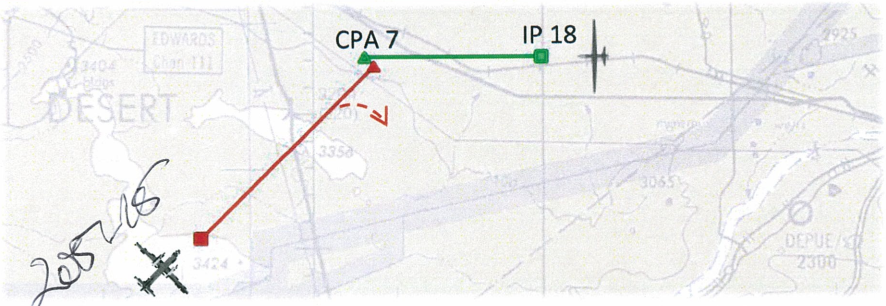
SAAP health

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 22	Version 9

Card# 15

L55C

Ownship



205-16

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

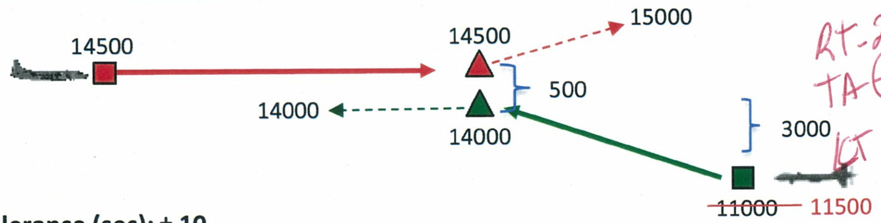
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



RT-270
TA-Ⓑ
CT
B

Tolerance (sec): ± 10

COMEX TIME: 0930

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP18	**N34° 57.09'**	**W117° 19.69'**	11500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

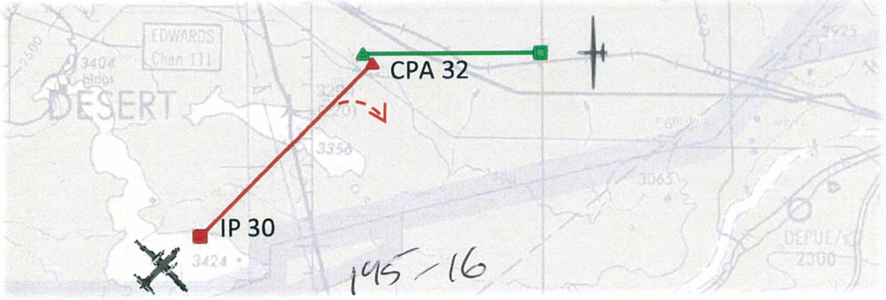
NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 22	Version 9

Card#

L55C

Intruder 1



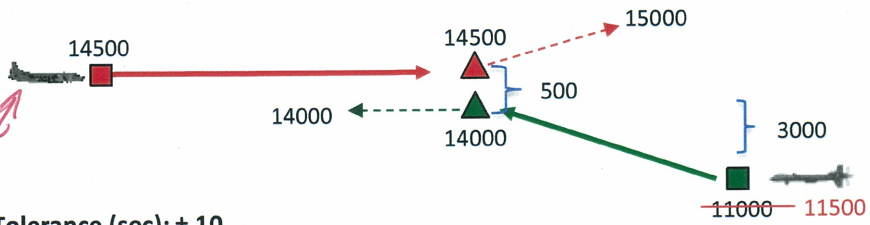
195-16

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



Tolerance (sec): ± 10

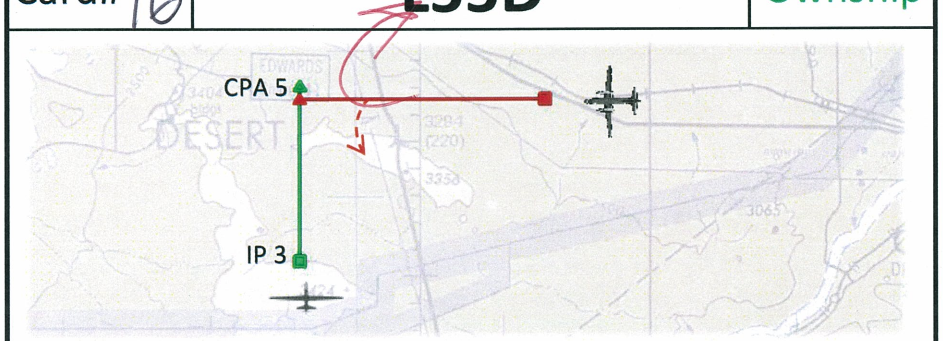
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	14500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 43	Version 9
Card# 16	**L55D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

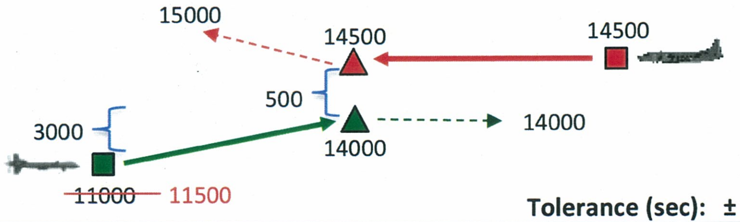
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14000

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

ABORT PROCEDURE

14000	**MAINTAIN HDG**



RT 060

LT BC

Tolerance (sec): ± 10

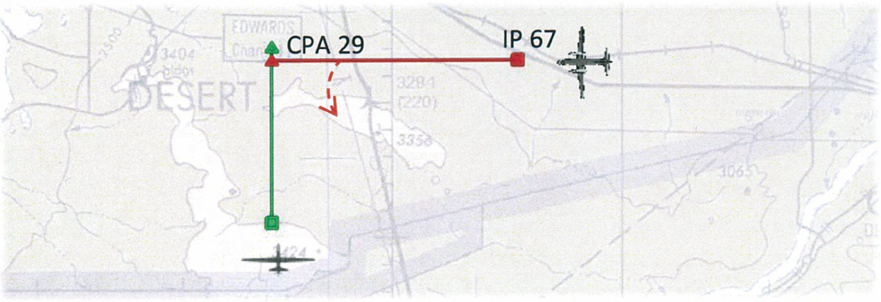
COMEX TIME: 0940

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP3	**N34° 50.55'**	**W117° 35.30'**	11500	6.5	**130**	
	N34° 50' 33.0"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14000	0.0	**130**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 43	Version 9
Card#	**L55D**		Intruder 1

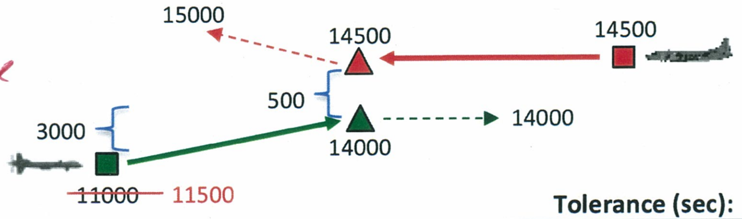


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	150



Tolerance (sec): ± 10

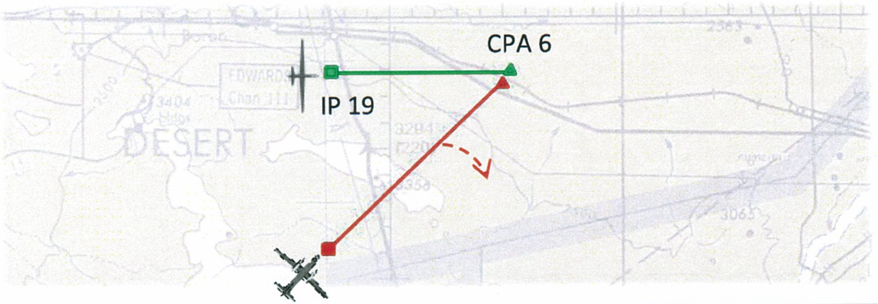
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP67	**N34° 56.56'**	**W117° 24.32'**	14500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 65	Version 9
Card# 17	L55F		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

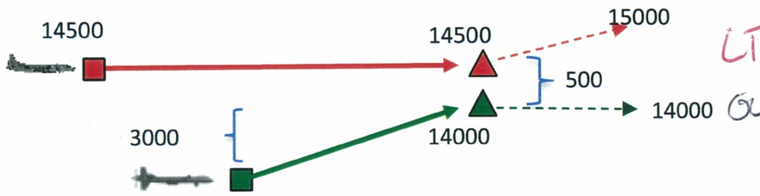
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☒ ADS-B		☑ RADAR	☒ TCAS	☒ TRACKER



LT 050

OUT of FOR

~~11000~~ 11500

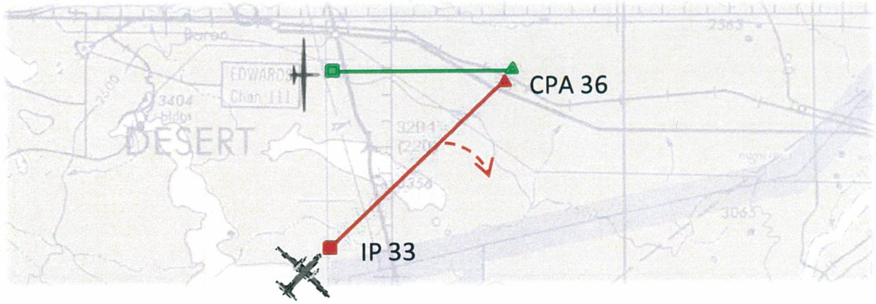
Tolerance (sec): ± 10

COMEX TIME: 0948 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP19	**N34° 57.89'**	**W117° 32.40'**	11500	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 65	Version 9
Card#	L55F		Intruder 1

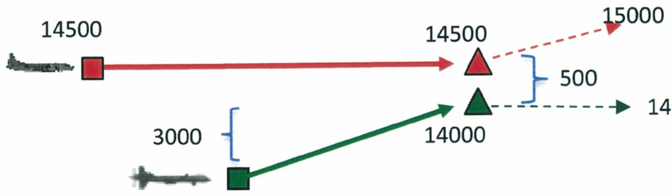


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



~~11000~~ 11500

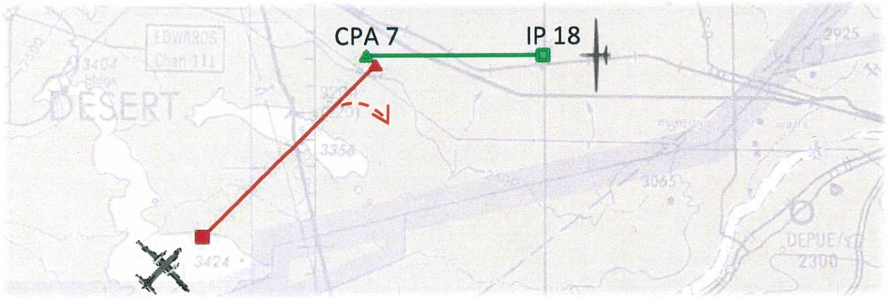
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	14500	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 24	Version 9
Card# 18	L57C		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

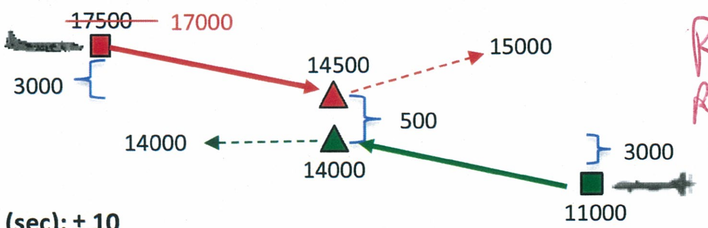
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14000

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

ABORT PROCEDURE

14000	**MAINTAIN HDG**



RT-270
RT-290
B Ø

Tolerance (sec): ± 10

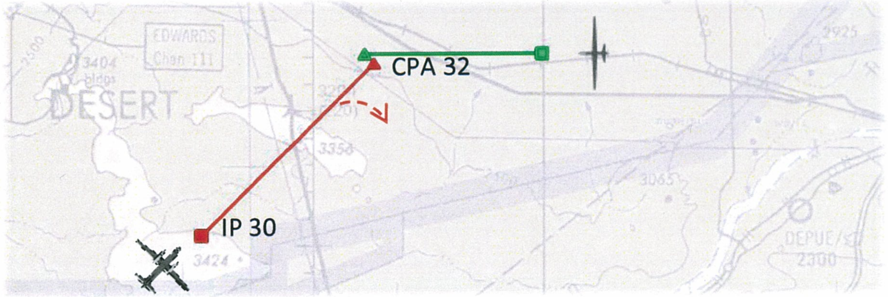
COMEX TIME: 0954

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	11000	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 24	Version 9
Card#	L57C		Intruder 1

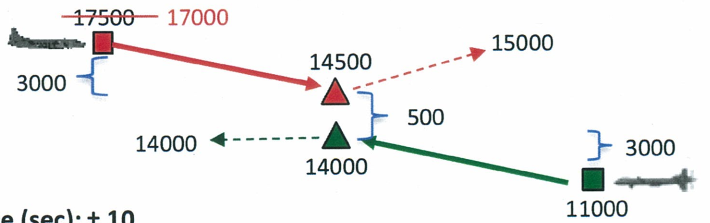


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**120**



Tolerance (sec): ± 10

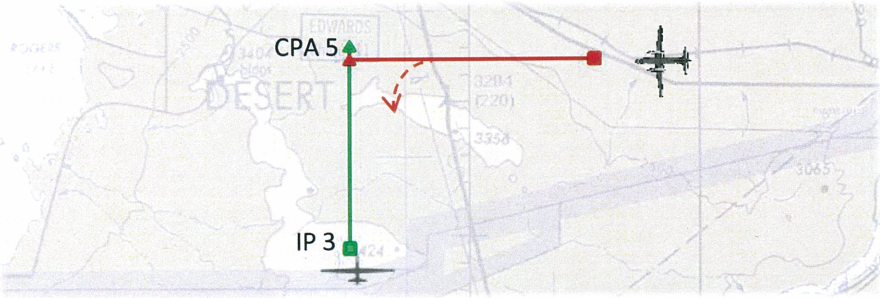
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	17000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	-1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 45	Version 9
Card# 14	**L57D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 10

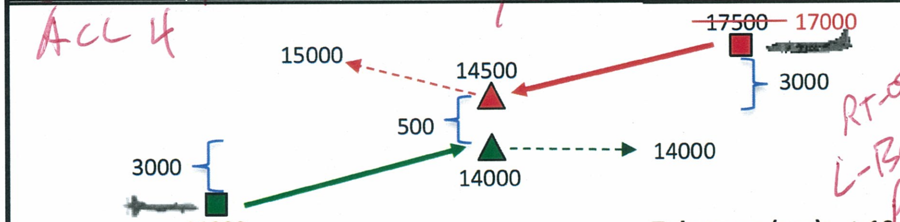
DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	MAINTAIN HDG

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
~~☒ ADS-B~~	~~☒ RADAR~~	~~☑ TCAS~~	~~☒ TRACKER~~

ACC 4



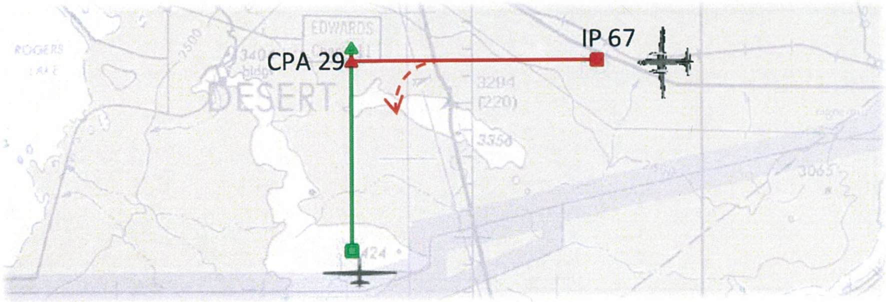
RT-55
L-Bank + AB
RA-870

Tolerance (sec): ± 10

COMEX TIME: 1007			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP3	N34° 50.55'	W117° 35.30'	11000	6.5	130	
	N34° 50' 33.0"	W117° 35' 18.0"	1000	348		
CPA5	N34° 57.05'	W117° 35.30'	14000	0.0	130	
	N34° 57' 03.0"	W117° 35' 18.0"	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 45	Version 9
Card#	**L57D**		Intruder 1



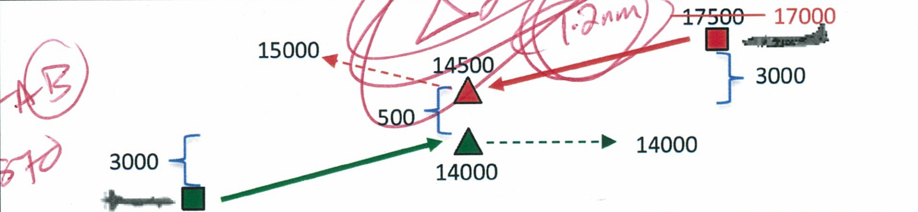
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	150

14300
Δ 200
1.2nm

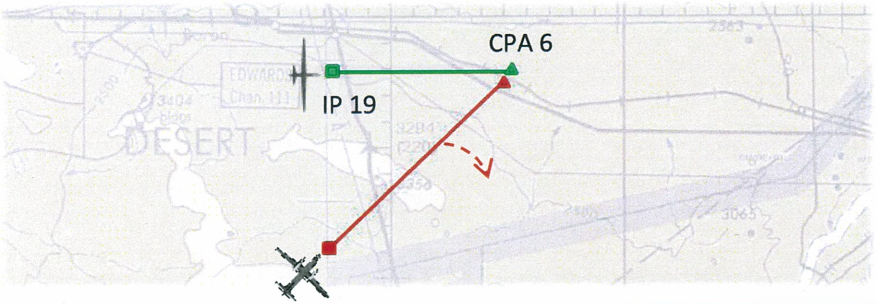


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	N34° 56.56'	W117° 24.32'	17000	9.0	180	
	N34° 56' 33.4"	W117° 24' 19.2"	-1000	258		
CPA29	N34° 56.56'	W117° 35.30'	14500	0.0	180	
	N34° 56' 33.4"	W117° 35' 18.0"	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1	Aircraft: NASA 870	S/N: 67	Version 9
Card# 20	L57F		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

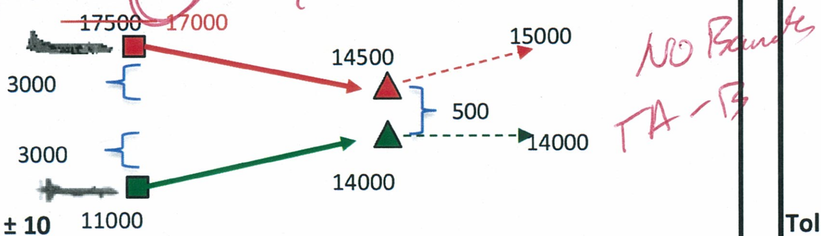
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



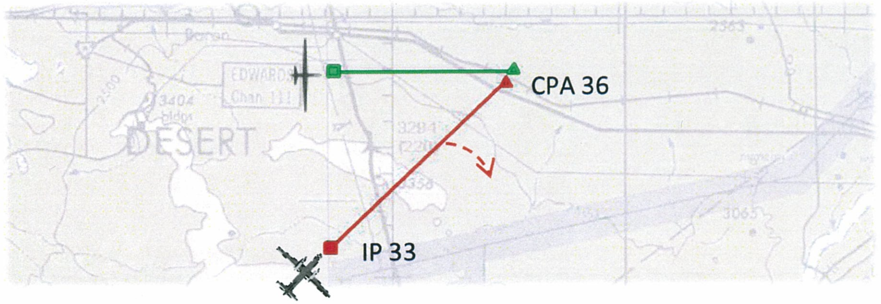
NO Bands
TA - B

Tolerance (sec): ± 10

COMEX TIME: 1016			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP19	**N34° 57.89'**	**W117° 32.40'**	11000	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	14000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1	Aircraft: N3GC C90	S/N: 67	Version 9
Card#	L57F		Intruder 1



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	~~**030**~~ 120

Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	17000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	-1000	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	14500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

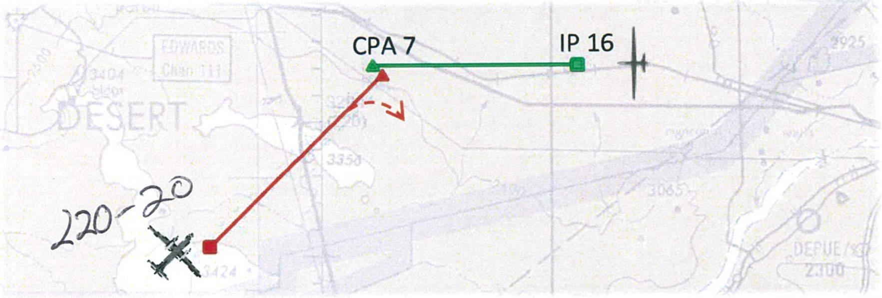
NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1 | Aircraft: NASA 870 | S/N: 25 | Version 9

Card# 21

L53C

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

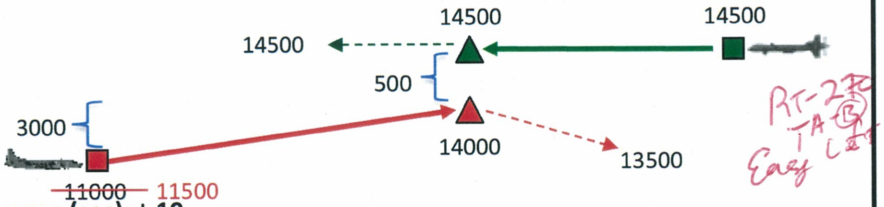
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
14500

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☒ RADAR ☒ TCAS ☒ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 1026

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	14500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	14500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

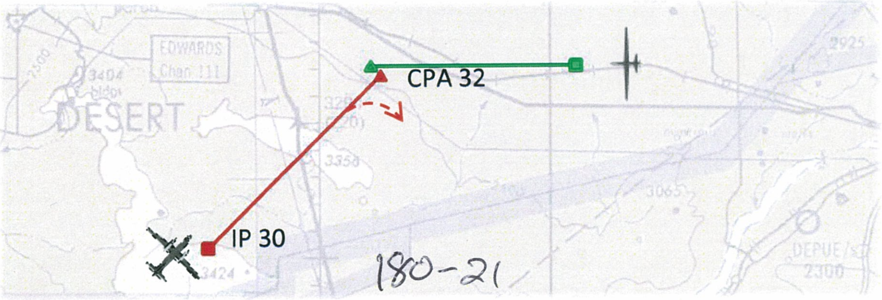
NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1 | Aircraft: N3GC C90 | S/N: 25 | Version 9

Card#

L53C

Intruder 1

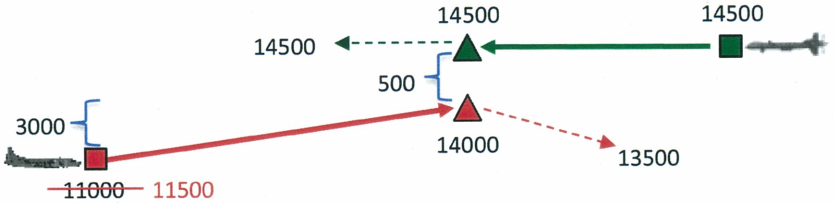


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13500

ABORT PROCEDURE

13500	**120**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP30	**N34° 50.38'**	**W117° 34.96'**	11500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	1000	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	14000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

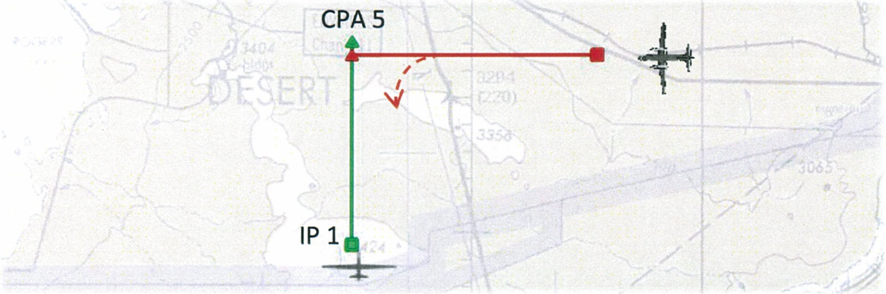
NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1 | Aircraft: NASA 870 | S/N: 46 | Version 9

Card# 22

L53D

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

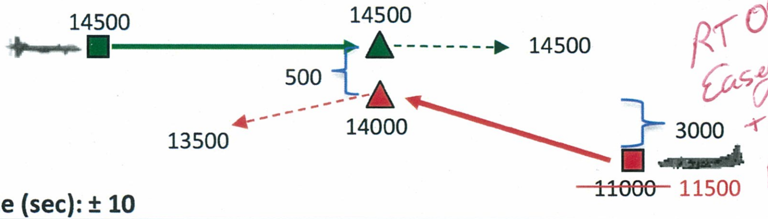
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14500

ABORT PROCEDURE

14500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☒ RADAR ☒ TCAS ☒ TRACKER



RT 045
Easy LT
+AB

RA 1870
LT B

Tolerance (sec): ± 10

COMEX TIME: 1036
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	14500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1 | Aircraft: N3GC C90 | S/N: 46 | Version 9

Card#

L53D

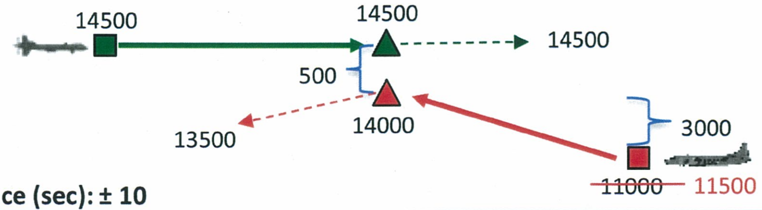
Intruder 1

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13500

ABORT PROCEDURE

13500	← **150**



Tolerance (sec): ± 10

COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP67	**N34° 56.56'**	**W117° 24.32'**	11500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14000	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

12.8 Flight 8 Redlined Flight Cards

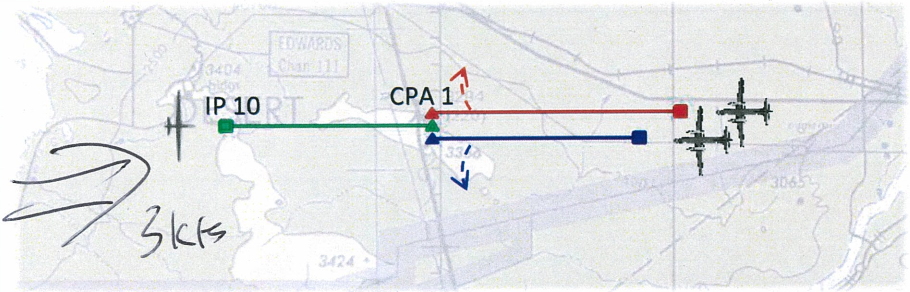
20150710

Order of Cards
Flight 8

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				N3GC/865	Multiship
1	8 - M59Q	1	Stratway+	Follow Stratway+ Display	N3GC/865	Multiship
2	8 - M59Q	2		Follow Stratway+ Display	N3GC/865	Multiship
3	28 - M59V	1		Follow Stratway+ Display	N3GC/865	Multiship
4	28 - M59V	2		Follow Stratway+ Display	N3GC/865	Multiship
5	71 - M59W	1		Follow Stratway+ Display	N3GC/865	Multiship
6	71 - M59W	2		Follow Stratway+ Display	N3GC/865	Multiship
7	9 - M59U	1		Follow Stratway+ Display	N3GC/865	Multiship
8	27 - M59R	1		Follow Stratway+ Display	N3GC/865	Multiship
9	48 - M59S	1		Follow Stratway+ Display	N3GC/865	Multiship
10	70 - M59T	1		Follow Stratway+ Display	N3GC/865	Multiship
11	9 - M59U	2		Follow Stratway+ Display	N3GC/865	Multiship
12	27 - M59R	2		Follow Stratway+ Display	N3GC/865	Multiship
13	48 - M59S	2		Follow Stratway+ Display	N3GC/865	Multiship
14	70 - M59T	2		Follow Stratway+ Display	N3GC/865	Multiship
15	63 - L12N	1		Follow Stratway+ Display	N3GC	
16	63 - L12N	2		Follow Stratway+ Display	N3GC	
		2		Follow Stratway+ Display	N3GC	
		2		Follow Stratway+ Display	N3GC	
		2		Follow Stratway+ Display	N3GC	
		2		Follow Stratway+ Display	N3GC	
		2		Follow Stratway+ Display	N3GC	
22	122 - L31G	2	CPDS Display	None - Fly Through	N3GC	90°
23	125 - L54G	2		None - Fly Through	N3GC	90°
		2		None - Fly Through	N3GC	110°

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 8	Version 9
Card# 1	**M59Q**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

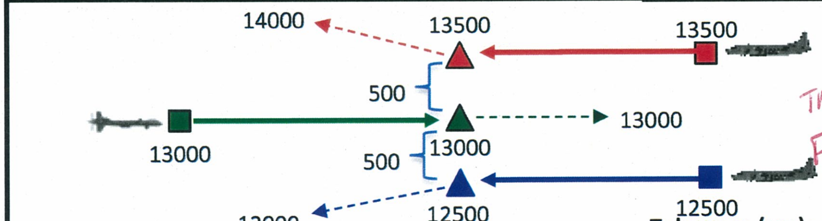
LOST LINK MISSION:
LL WPT 2

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☐ TCAS	☐ TRACKER



LT-030
TA Ⓑ 56 / 870
Further LT
Escape Ctr
RTB Ø

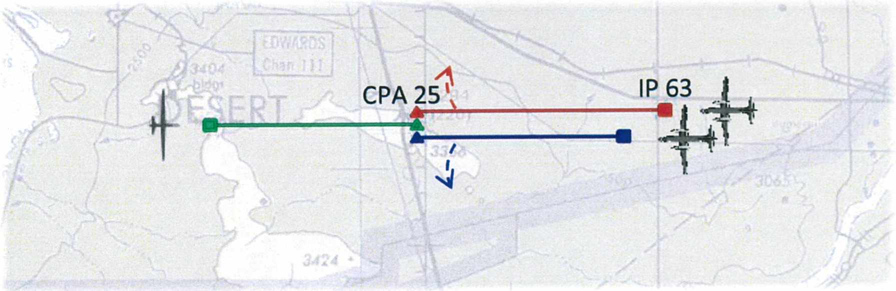
Tolerance (sec): ± 10

COMEX TIME: 0646	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP10	**N34° 54.63'**	**W117° 39.44'**	13000	7.5	**150**	
	N34° 54' 37.8"	**W117° 39' 26.1"**	0	078		
CPA1	**N34° 54.63'**	**W117° 30.29'**	13000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 8	Version 9
Card#	**M59Q**		Intruder 1

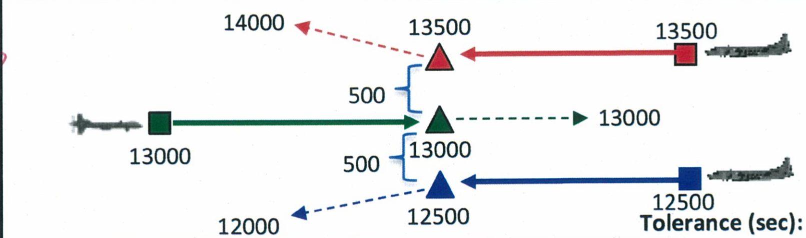


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**300**



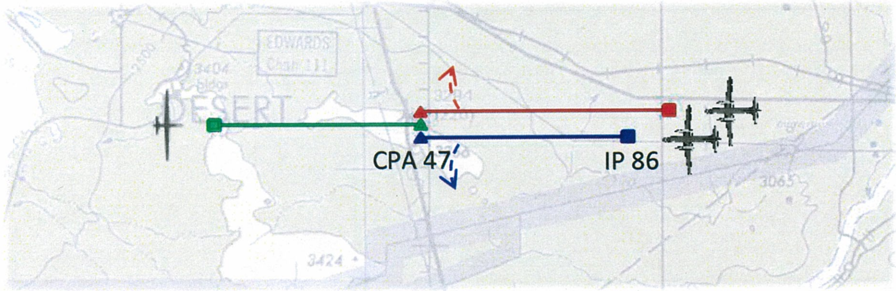
Tolerance (sec): ± 10

COMEX TIME:	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP63	**N34° 55.12'**	**W117° 19.31'**	13500	9.0	**180**	
	N34° 55' 07.4"	**W117° 19' 18.8"**	0	258		
CPA25	**N34° 55.12'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 55' 07.4"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: ~~NASA 870~~ 865	S/N: 8	Version 9
Card# 1	**M59Q**		Intruder 2

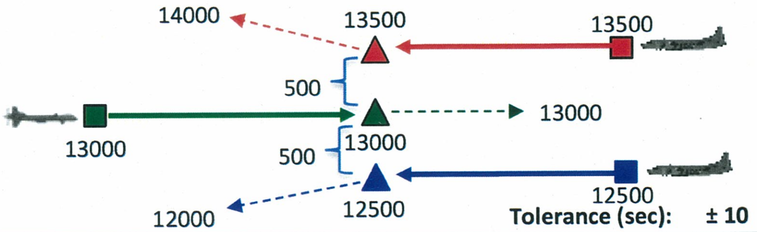


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**240**

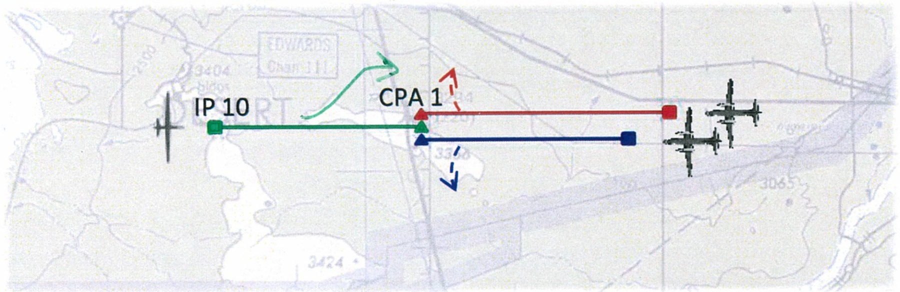


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP86	**N34° 54.14'**	**W117° 21.15'**	12500	7.5	**150**	
	N34° 54' 08.2"	**W117° 21' 08.7"**	0	258		
CPA47	**N34° 54.14'**	**W117° 30.29'**	12500	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 8	Version 9
Card# 2	**M59Q**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

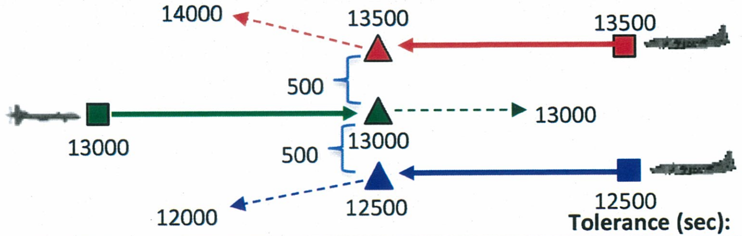
LOST LINK MISSION:
LL WPT 2

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

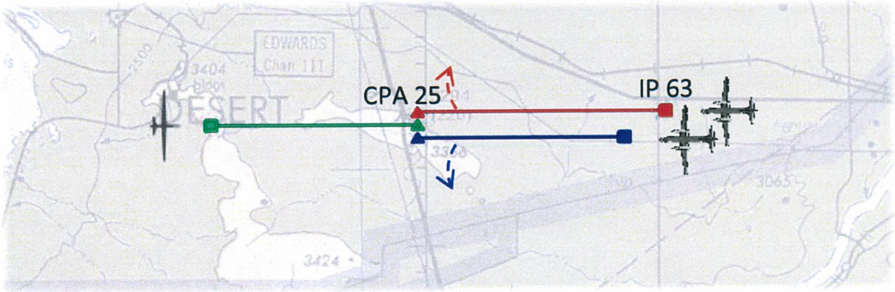
COMEX TIME: 0656

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP10	**N34° 54.63'**	**W117° 39.44'**	13000	7.5	**150**	
	N34° 54' 37.8"	**W117° 39' 26.1"**	0	078		
CPA1	**N34° 54.63'**	**W117° 30.29'**	13000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 8	Version 9
Card#	**M59Q**		Intruder 1

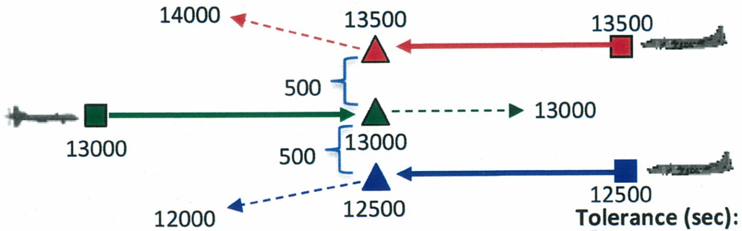


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	300



Tolerance (sec): ± 10

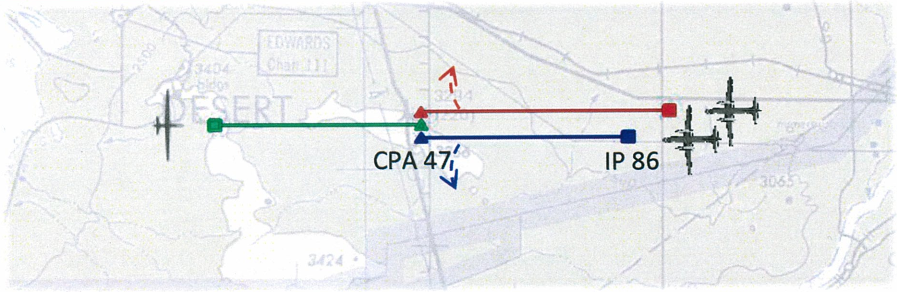
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP63	**N34° 55.12'**	**W117° 19.31'**	13500	9.0	**180**	
	N34° 55' 07.4"	**W117° 19' 18.8"**	0	258		
CPA25	**N34° 55.12'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 55' 07.4"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: ~~NASA 870~~ 865	S/N: 8	Version 9
Card# 2	**M59Q**		Intruder 2

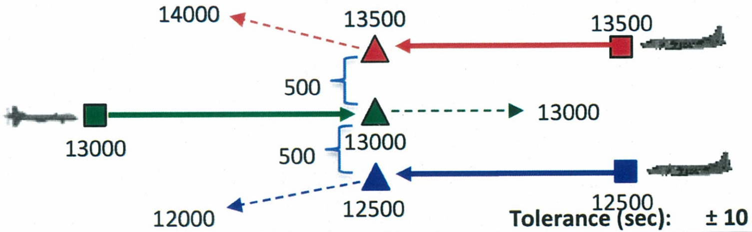


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**240**



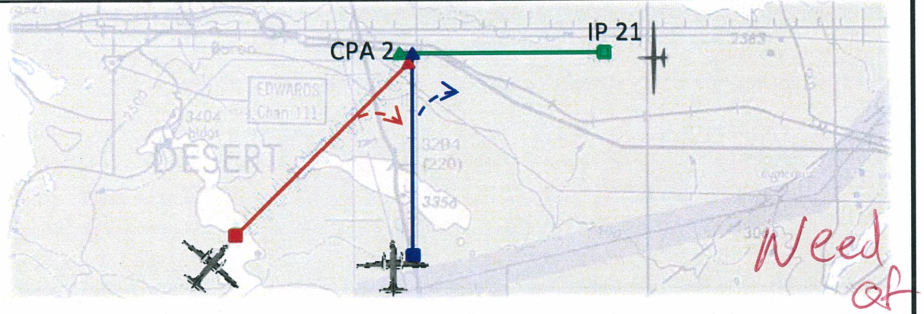
Tolerance (sec): **± 10**

COMEX TIME:	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP86	**N34° 54.14'**	**W117° 21.15'**	12500	7.5	**150**	
	N34° 54' 08.2"	**W117° 21' 08.7"**	0	258		
CPA47	**N34° 54.14'**	**W117° 30.29'**	12500	0.0	**150**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 28	Version 9
Card# 3	**M59V**		Ownship



Need of

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

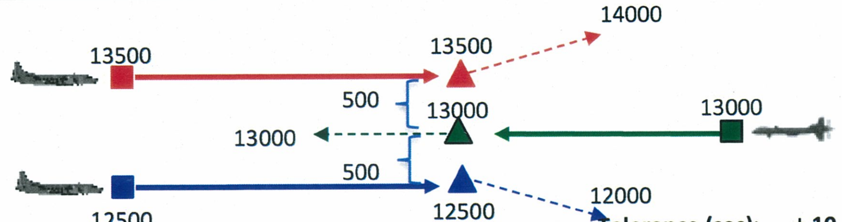
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



Tolerance (sec): ± 10

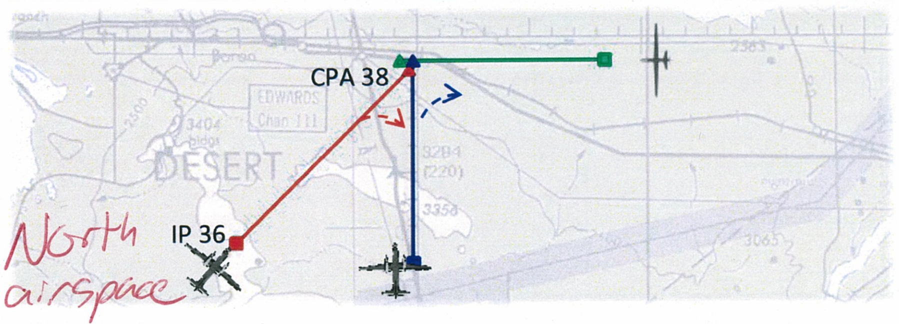
COMEX TIME: 0705

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP21	**N34° 59.12'**	**W117° 21.57'**	13000	7.5	**150**	
	N34° 59' 07.2"	**W117° 21' 33.9"**	0	258		
CPA2	**N34° 59.12'**	**W117° 30.72'**	13000	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 28	Version 9
Card#	**M59V**		Intruder 1



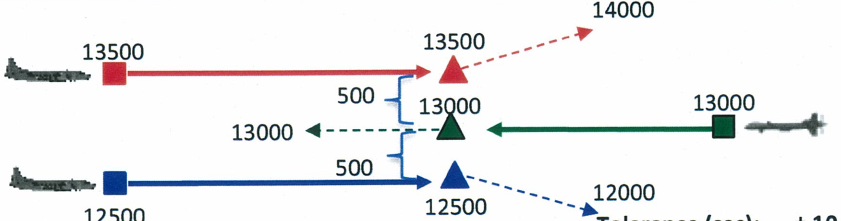
North airspace

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	120



Tolerance (sec): ± 10

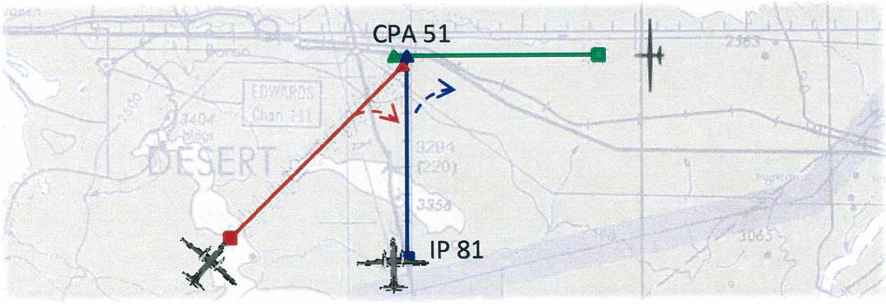
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP36	**N34° 52.41'**	**W117° 38.06'**	13500	9.0	**180**	
	N34° 52' 24.4"	**W117° 38' 03.7"**	0	033		
CPA38	**N34° 58.77'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 58' 46.3"	**W117° 30' 17.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	~~Aircraft: NASA 870~~ 865	S/N: 28	Version 9
Card# 3	**M59V**		Intruder 2

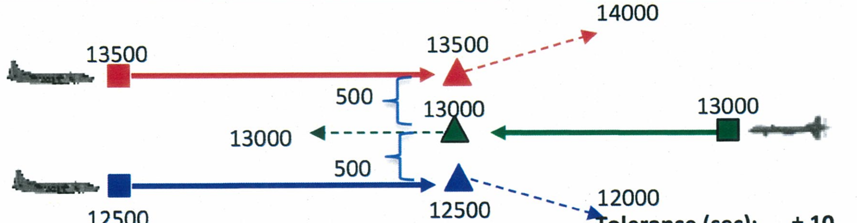


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



Tolerance (sec): **± 10**

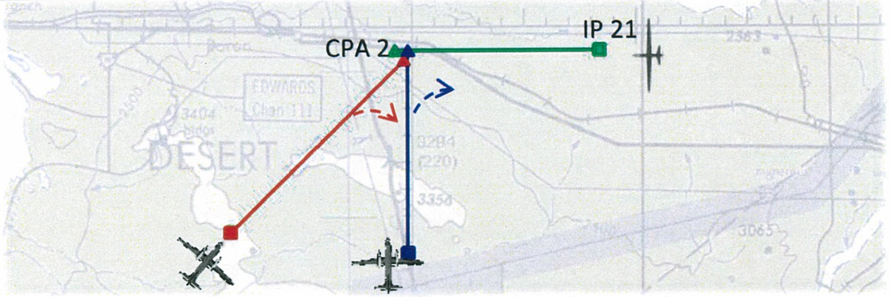
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP81	**N34° 51.62'**	**W117° 30.12'**	12500	7.5	**150**	
	N34° 51' 37.2"	**W117° 30' 07.0"**	0	348		
CPA51	**N34° 59.12'**	**W117° 30.12'**	12500	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 07.0"**	0	348		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 28	Version 9
Card# 4	**M59V**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

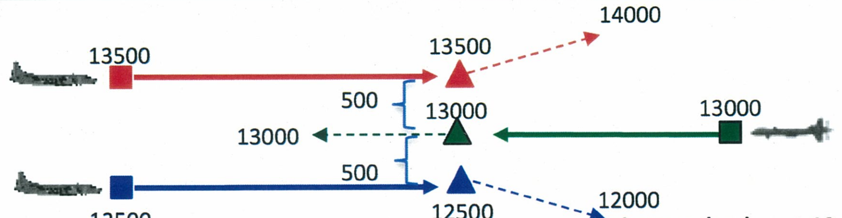
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

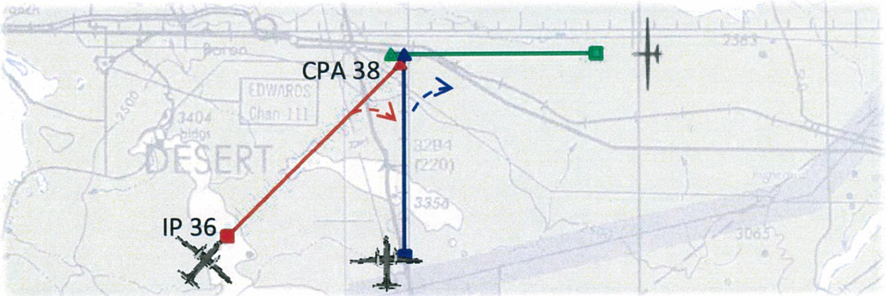


Tolerance (sec): ± 10

COMEX TIME: 0705			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP21	**N34° 59.12'**	**W117° 21.57'**	13000	7.5	**150**	
	N34° 59' 07.2"	**W117° 21' 33.9"**	0	258		
CPA2	**N34° 59.12'**	**W117° 30.72'**	13000	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 28	Version 9
Card#	**M59V**		Intruder 1

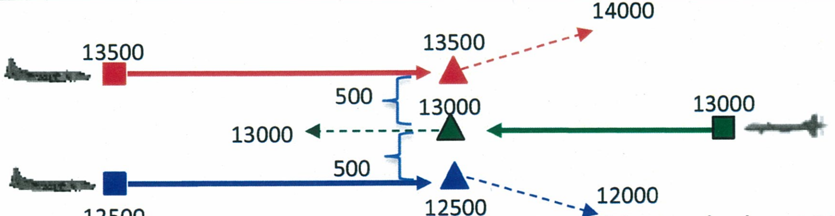


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**



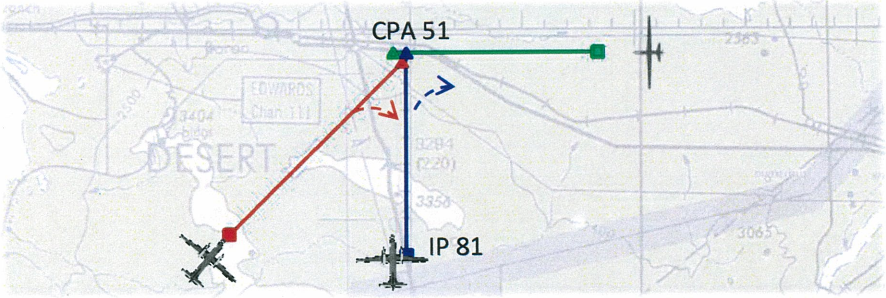
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP36	**N34° 52.41'**	**W117° 38.06'**	13500	9.0	**180**	
	N34° 52' 24.4"	**W117° 38' 03.7"**	0	033		
CPA38	**N34° 58.77'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 58' 46.3"	**W117° 30' 17.6"**	0	033		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~Aircraft: NASA 870~~	S/N: 28	Version 9
Card# 4	**M59V**		Intruder 2

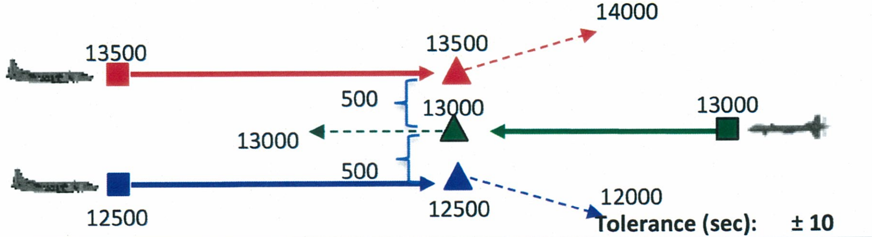


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



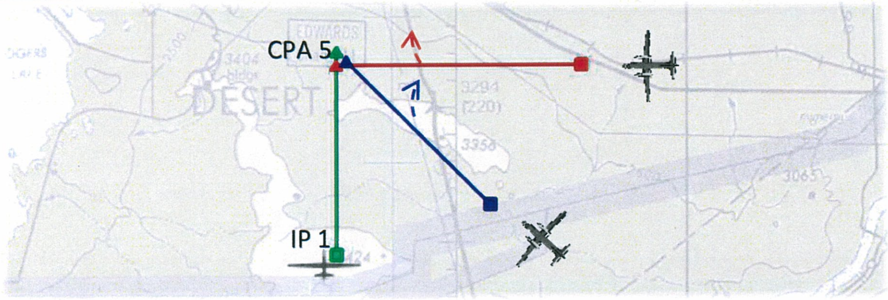
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP81	**N34° 51.62'**	**W117° 30.12'**	12500	7.5	**150**	
	N34° 51' 37.2"	**W117° 30' 07.0"**	0	348		
CPA51	**N34° 59.12'**	**W117° 30.12'**	12500	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 07.0"**	0	348		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 71	Version 9

Card# 5	**M59W**	Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

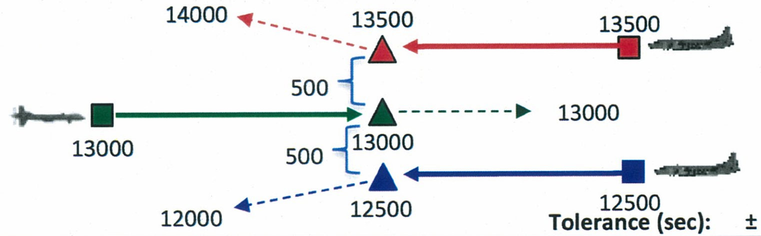
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0725

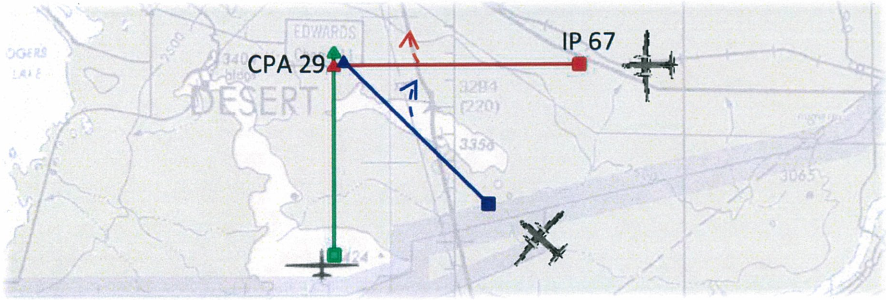
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	13000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 71	Version 9

Card#	**M59W**	Intruder 1

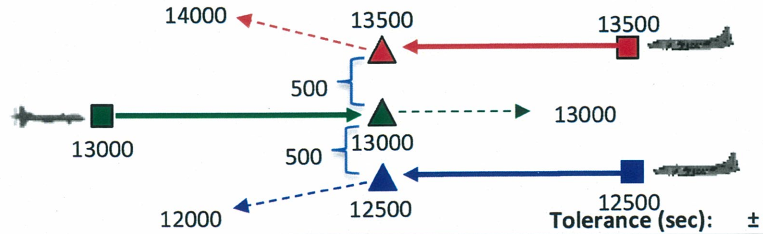


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**030**



Tolerance (sec): ± 10

COMEX TIME:

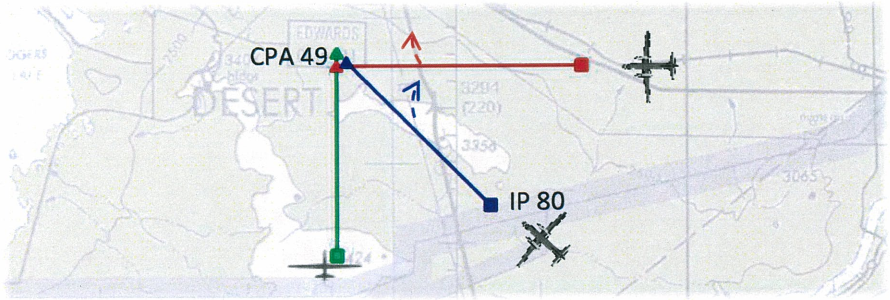
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	13500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	13500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~**Aircraft: NASA 870**~~	**S/N: 71**	**Version 9**
Card# 5	**M59W**		Intruder 2

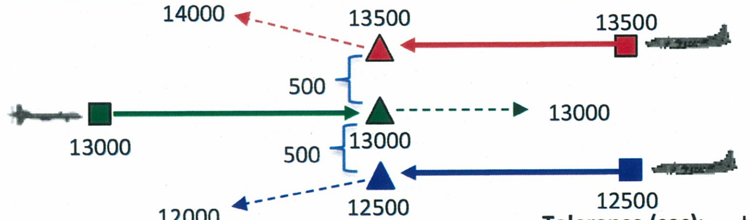


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**030**



Tolerance (sec): ± 10

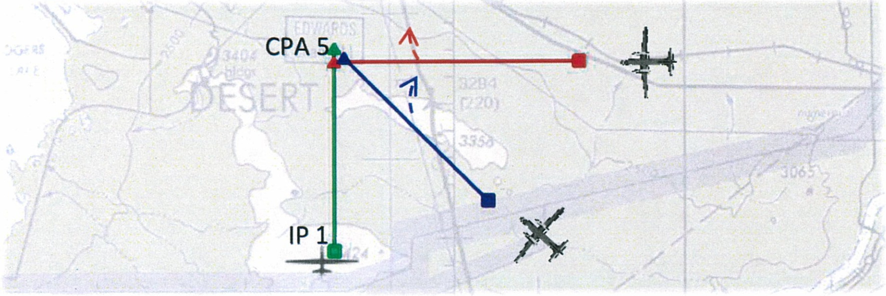
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP80	**N34° 51.40'**	**W117° 28.41'**	12500	7.5	**150**	
	N34° 51' 23.9"	**W117° 28' 24.3"**	0	303		
CPA49	**N34° 56.70'**	**W117° 34.87'**	12500	0.0	**150**	
	N34° 56' 42.1"	**W117° 34' 52.4"**	0	303		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 71	Version 9
Card# 6	**M59W**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

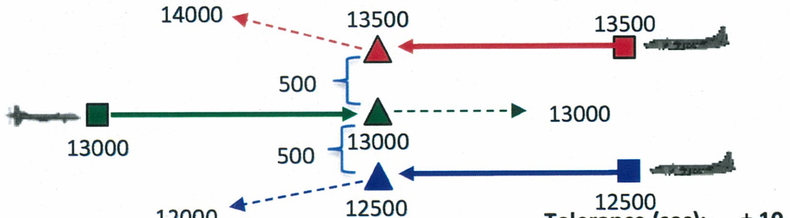
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

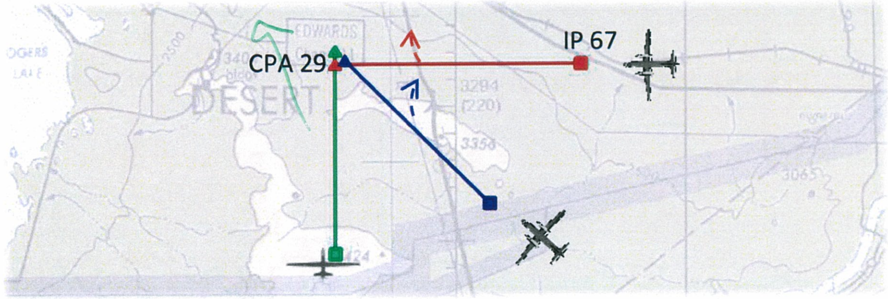
COMEX TIME: 0735

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	13000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 71	Version 9
Card#	**M59W**		Intruder 1

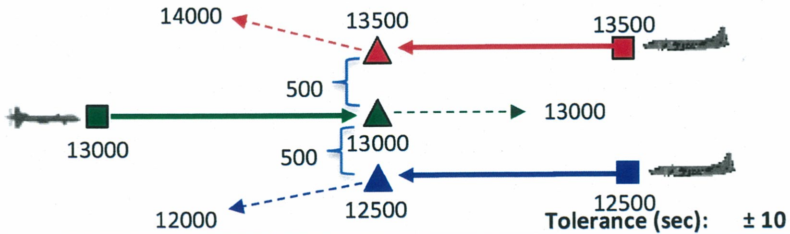


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**030**



Tolerance (sec): ± 10

COMEX TIME:

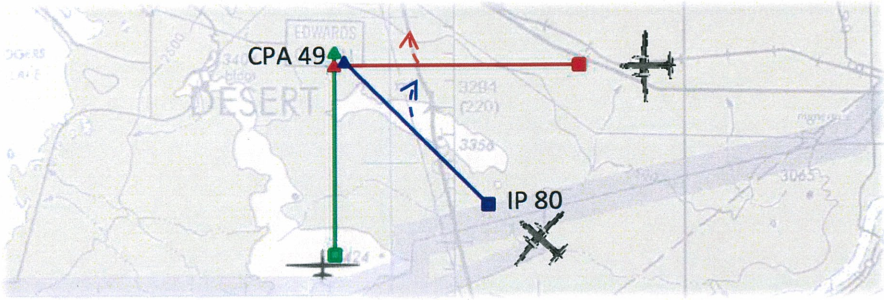
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	13500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	13500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~Aircraft: NASA 870~~	S/N: 71	Version 9
Card# 6	**M59W**		Intruder 2

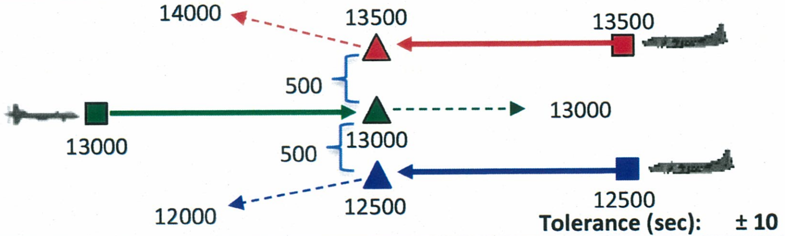


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

$\overline{12000}$	030



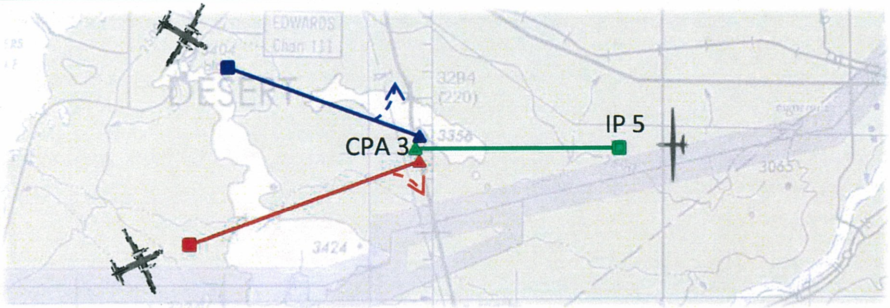
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP80	N34° 51.40'	W117° 28.41'	12500	7.5	150	
	N34° 51' 23.9"	W117° 28' 24.3"	0	303		
CPA49	N34° 56.70'	W117° 34.87'	12500	0.0	150	
	N34° 56' 42.1"	W117° 34' 52.4"	0	303		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 9	Version 9

Card# 7	**M59U**	Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

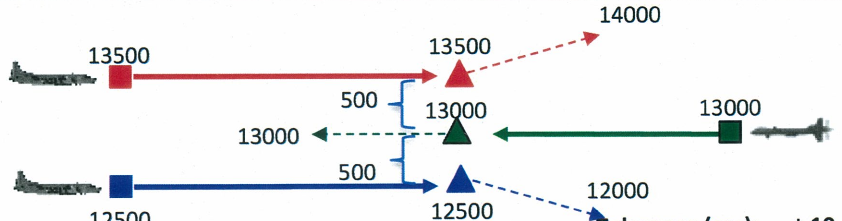
LOST LINK MISSION:
LL WPT 5

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER



Tolerance (sec): ± 10

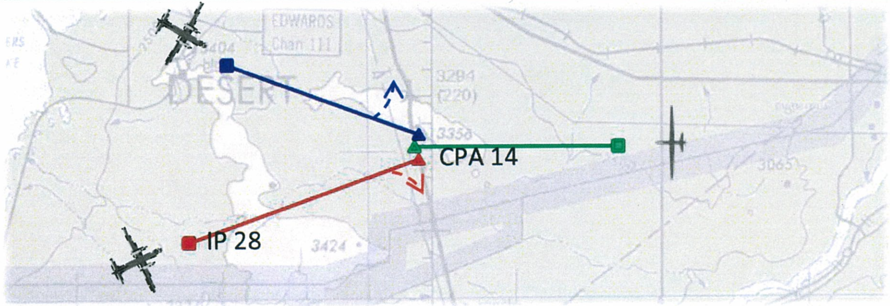
COMEX TIME: 0745
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP5	**N34° 53.12'**	**W117° 21.58'**	13000	7.5	**150**	
	N34° 53' 07.2"	**W117° 21' 34.6"**	0	258		
CPA3	**N34° 53.12'**	**W117° 30.72'**	13000	0.0	**150**	
	N34° 53' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 9	Version 9

Card#	**M59U**	Intruder 1

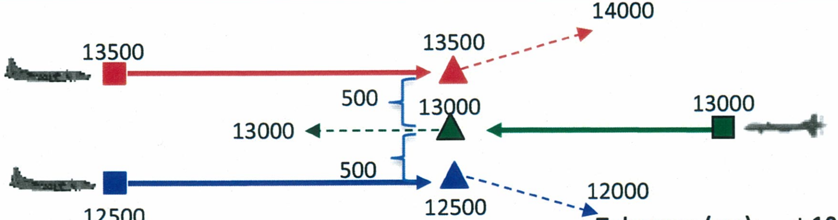


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**



Tolerance (sec): ± 10

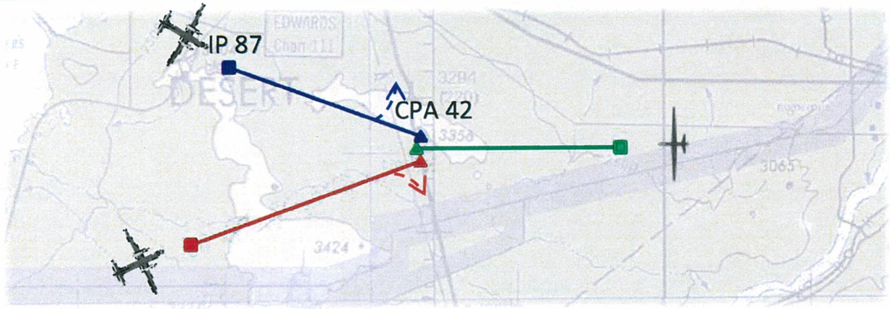
COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP28	**N34° 49.58'**	**W117° 40.82'**	13500	9.0	**180**	
	N34° 49' 34.7"	**W117° 40' 49.4"**	0	058		
CPA14	**N34° 52.66'**	**W117° 30.51'**	13500	0.0	**180**	
	N34° 52' 39.4"	**W117° 30' 30.8"**	0	058		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~Aircraft: NASA 870~~	S/N: 9	Version 9
Card# 7	**M59U**		Intruder 2

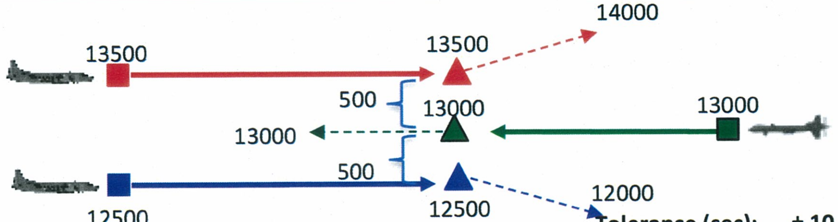


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**060**

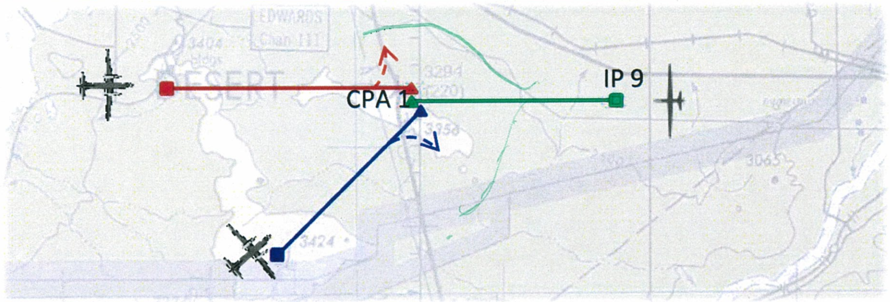


Tolerance (sec): **± 10**

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP87	**N34° 56.15'**	**W117° 39.11'**	12500	7.5	**150**	
	N34° 56' 08.9"	**W117° 39' 06.4"**	0	098		
CPA42	**N34° 53.58'**	**W117° 30.51'**	12500	0.0	**150**	
	N34° 53' 35.0"	**W117° 30' 30.8"**	0	098		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 27	Version 9
Card# 8	**M59R**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

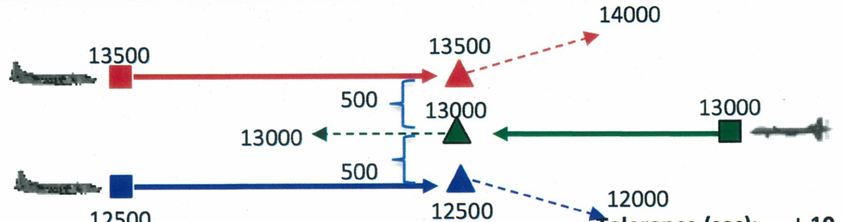
LOST LINK MISSION:
LL WPT 8

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☐ TRACKER



Tolerance (sec): ± 10

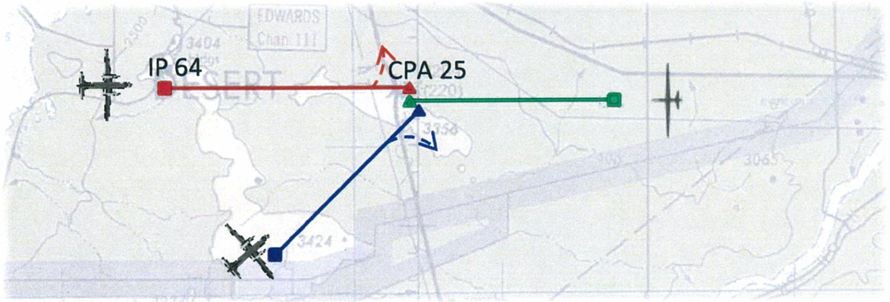
COMEX TIME: 0755

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP9	**N34° 54.63'**	**W117° 21.15'**	13000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	13000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 27	Version 9
Card#	**M59R**		Intruder 1

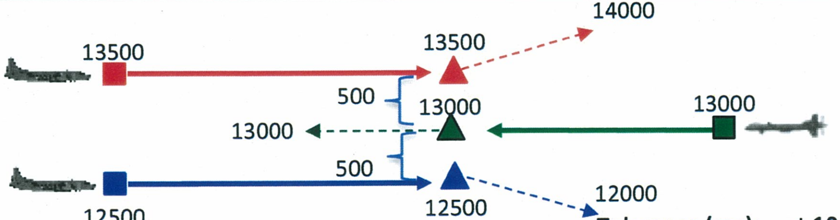


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**060**



Tolerance (sec): ± 10

COMEX TIME:

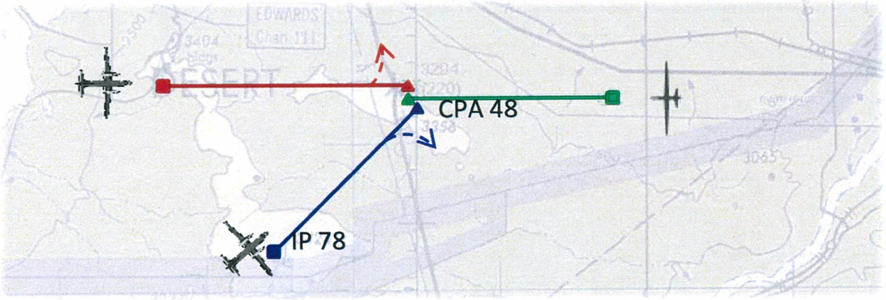
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP64	**N34° 55.12'**	**W117° 41.27'**	13500	9.0	**180**	
	N34° 55' 07.4"	**W117° 41' 16.0"**	0	078		
CPA25	**N34° 55.12'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 55' 07.4"	**W117° 30' 17.4"**	0	078		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~Aircraft: NASA 870~~	S/N: 27	Version 9
Card# 8	**M59R**		Intruder 2

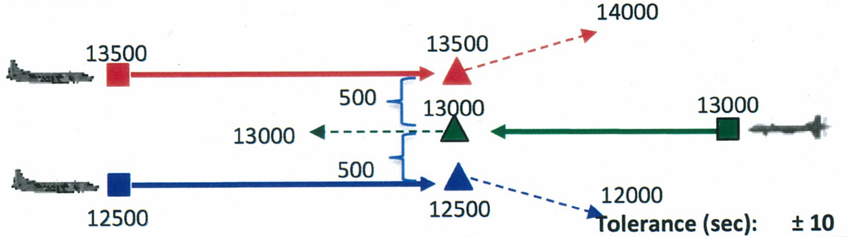


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



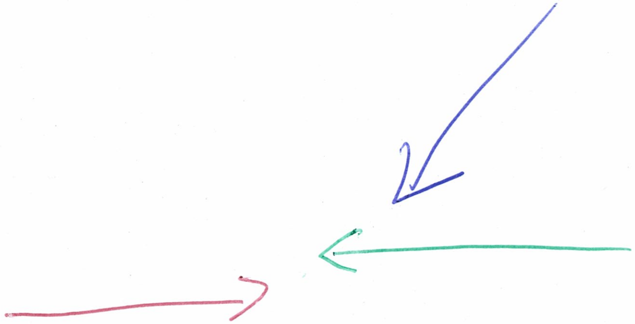
Tolerance (sec): ± 10

COMEX TIME:

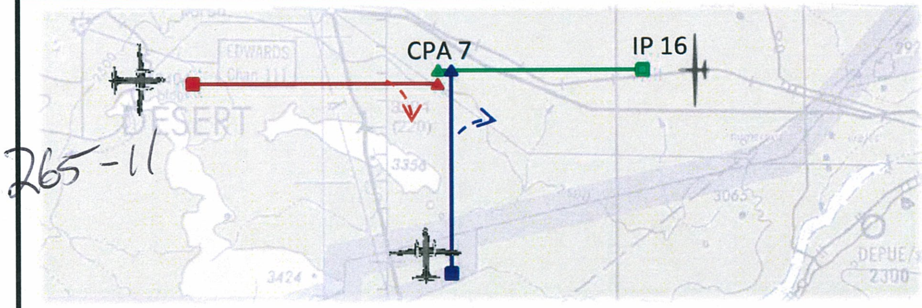
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP78	**N34° 48.98'**	**W117° 36.33'**	12500	7.5	**150**	
	N34° 48' 58.7"	**W117° 36' 19.9"**	0	033		
CPA48	**N34° 54.28'**	**W117° 29.87'**	12500	0.0	**150**	
	N34° 54' 16.9"	**W117° 29' 51.9"**	0	033		

NOTE: Expect Ikhana maneuver.



FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 48	Version 9
Card#9	**M59S**		Ownship



265-11

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

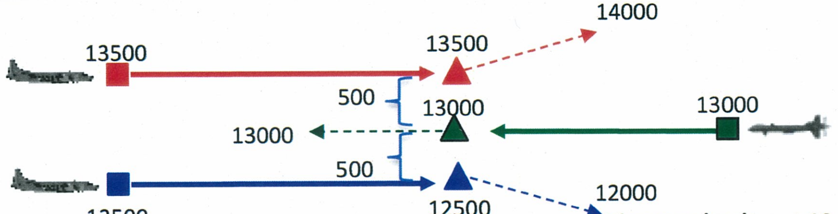
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☐ TRACKER

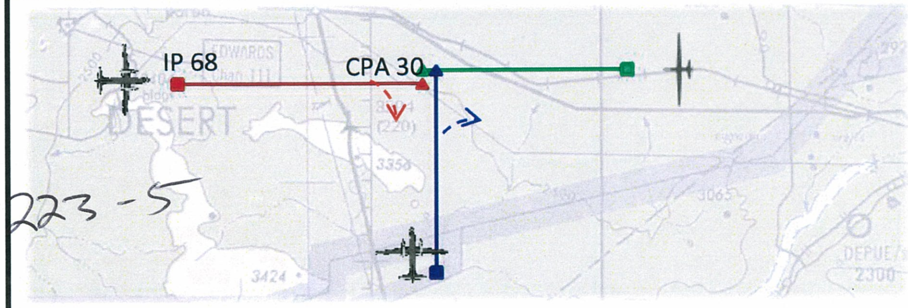


Tolerance (sec): ± 10

COMEX TIME: 0405			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	13000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 48	Version 9
Card#	**M59S**		Intruder 1



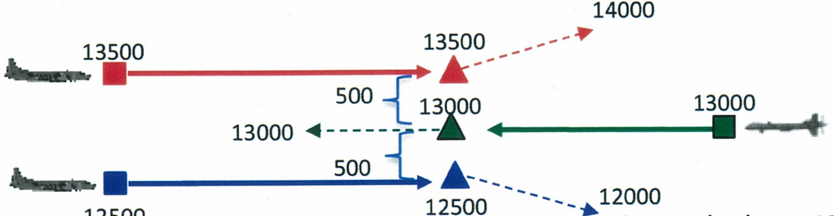
223-5

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	⤻ 120

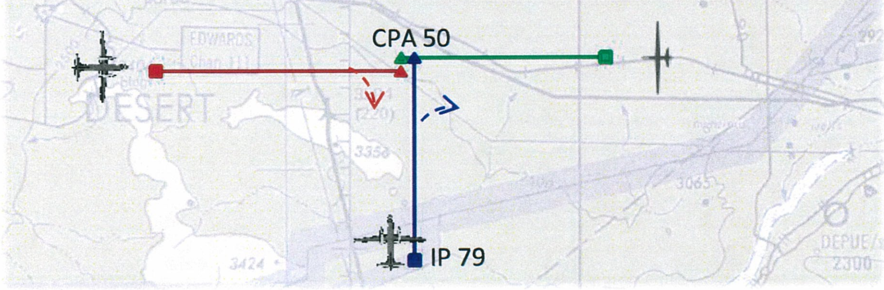


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP68	**N34° 56.60'**	**W117° 38.60'**	13500	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	13500	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	~~Aircraft: NASA 870~~ 805	S/N: 48	Version 9
Card# 9	**M59S**		Intruder 2

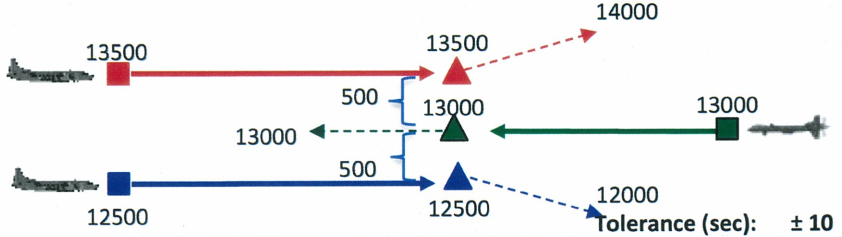


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	120

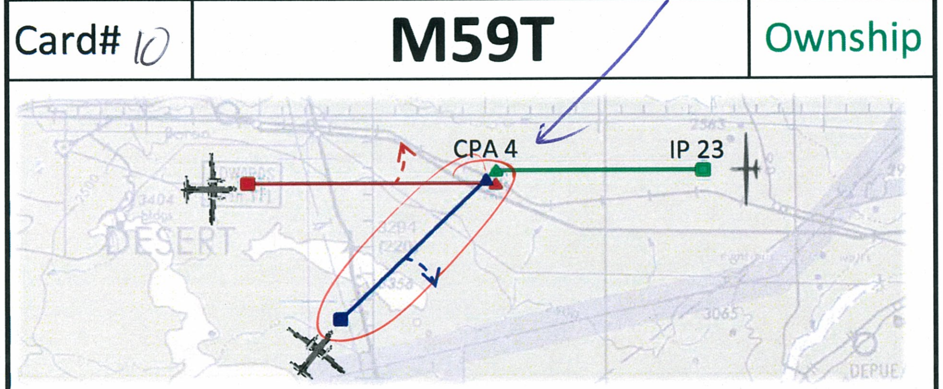


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP79	N34° 49.59'	W117° 27.02'	12500	7.5	150	
	N34° 49' 35.4"	W117° 27' 01.1"	0	348		
CPA50	N34° 57.09'	W117° 27.02'	12500	0.0	150	
	N34° 57' 05.4"	W117° 27' 01.1"	0	348		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 70	Version 9
Card# 10	**M59T**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

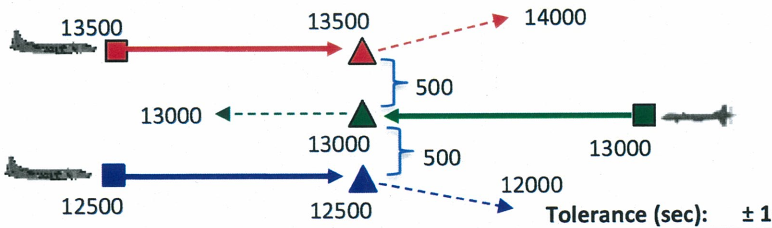
LOST LINK MISSION:
LL WPT 6

DECONFLICTION ALT:
13000

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER

ABORT PROCEDURE

13000	**MAINTAIN HDG**



Tolerance (sec): ± 10

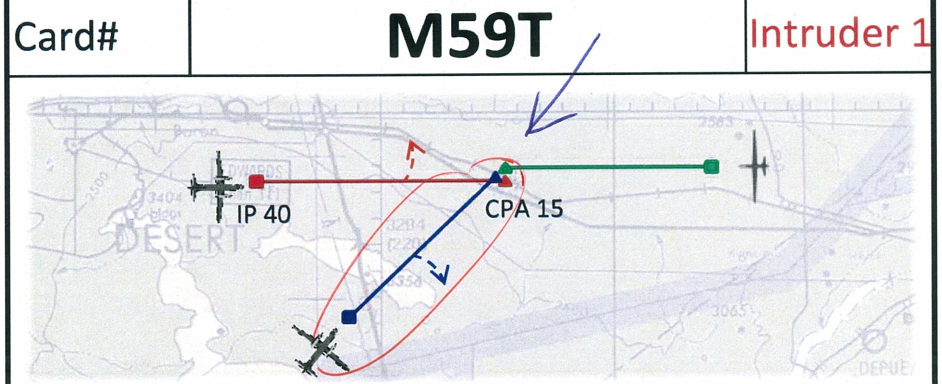
COMEX TIME: 0815

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 70	Version 9
Card#	**M59T**		Intruder 1

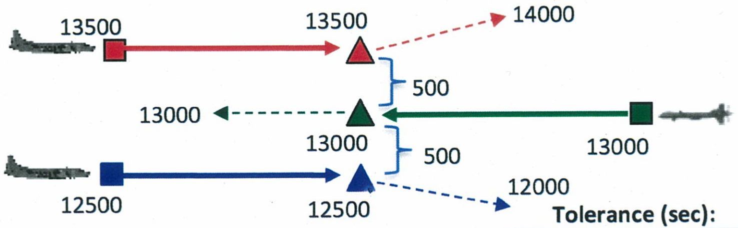


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**060**



Tolerance (sec): ± 10

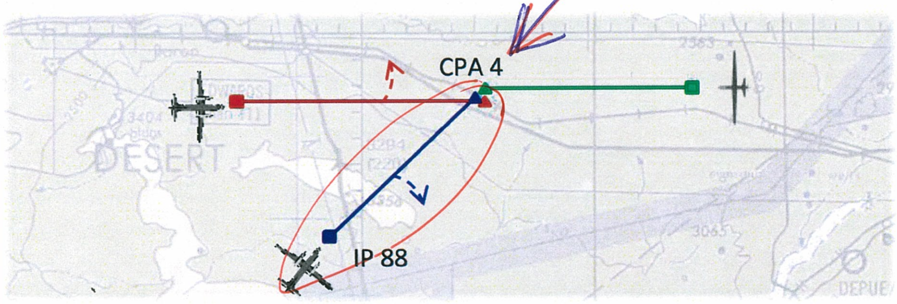
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP40	**N34° 53.12'**	**W117° 38.59'**	13500	9.0	**180**	
	N34° 53' 07.0"	**W117° 38' 35.5"**	0	078		
CPA15	**N34° 53.12'**	**W117° 27.62'**	13500	0.0	**180**	
	N34° 53' 07.0"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	865 ~~Aircraft: NASA 870~~	S/N: 70	Version 9
Card# 10	**M59T**		Intruder 2

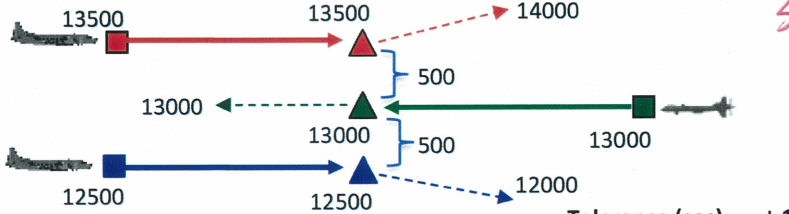


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	~~**160**~~ 330



Tolerance (sec): ± 10

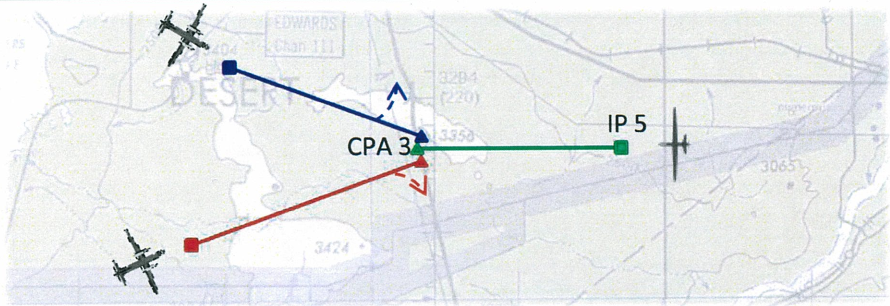
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP88	**N34° 59.26'**	**W117° 20.73'**	12500	7.5	**150**	
	N34° 59' 15.7"	**W117° 20' 43.7"**	0	033		
OK **CPA46**	**N34° 53.96'**	**W117° 27.20'**	12500	0.0	**150**	
	N34° 53' 57.5"	**W117° 27' 11.7"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 9	Version 9
Card# 11	**M59U**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

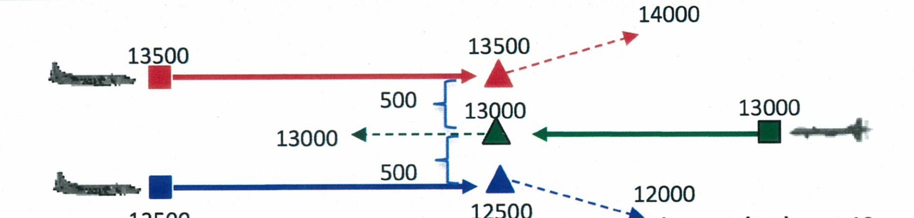
LOST LINK MISSION:
LL WPT 5

DECONFLICTION ALT:
13000

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

ABORT PROCEDURE

13000	**MAINTAIN HDG**



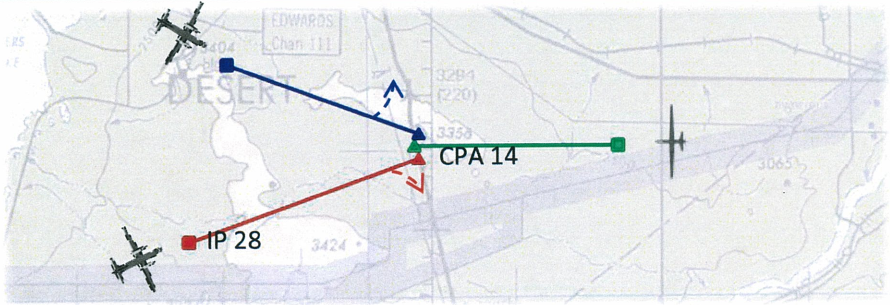
Tolerance (sec): ± 10

COMEX TIME: 6427
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP5	**N34° 53.12'**	**W117° 21.58'**	13000	7.5	**150**	
	N34° 53' 07.2"	**W117° 21' 34.6"**	0	258		
CPA3	**N34° 53.12'**	**W117° 30.72'**	13000	0.0	**150**	
	N34° 53' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 9	Version 9
Card#	**M59U**		Intruder 1

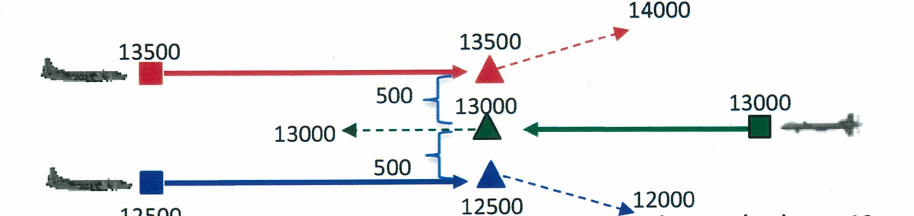


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**



Tolerance (sec): ± 10

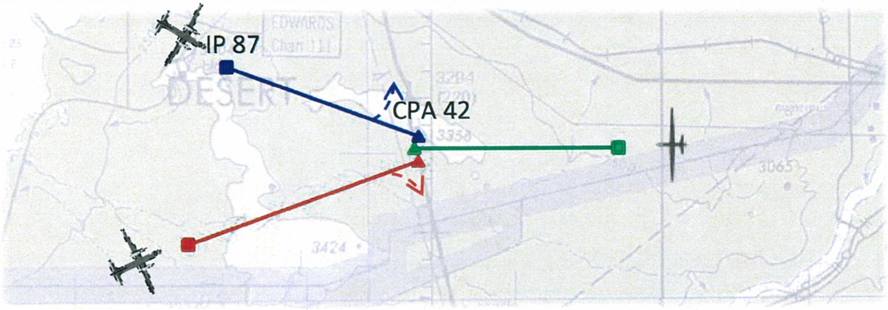
COMEX TIME:
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP28	**N34° 49.58'**	**W117° 40.82'**	13500	9.0	**180**	
	N34° 49' 34.7"	**W117° 40' 49.4"**	0	058		
CPA14	**N34° 52.66'**	**W117° 30.51'**	13500	0.0	**180**	
	N34° 52' 39.4"	**W117° 30' 30.8"**	0	058		

NOTE: Expect Ikhana maneuver.

865

FT-3, Configuration 1a	~~Aircraft: NASA 870~~	S/N: 9	Version 9
Card# 11	**M59U**		Intruder 2

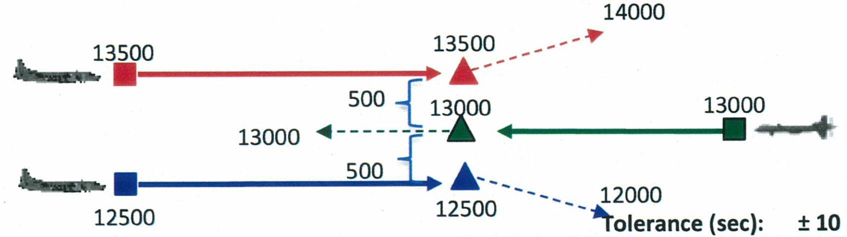


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**060**



Tolerance (sec): ± 10

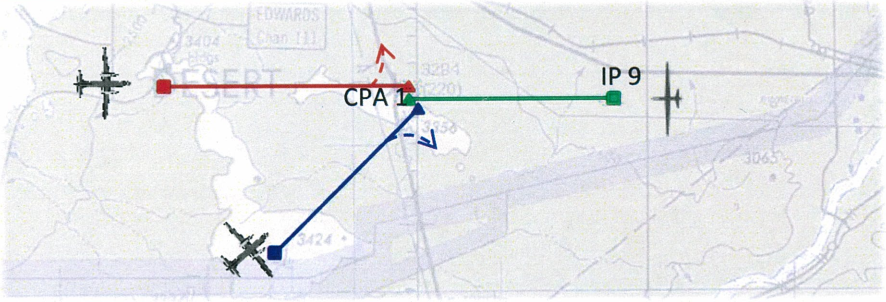
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP87	**N34° 56.15'**	**W117° 39.11'**	12500	7.5	**150**	
	N34° 56' 08.9"	**W117° 39' 06.4"**	0	098		
CPA42	**N34° 53.58'**	**W117° 30.51'**	12500	0.0	**150**	
	N34° 53' 35.0"	**W117° 30' 30.8"**	0	098		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 27	Version 9
Card# 12	**M59R**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

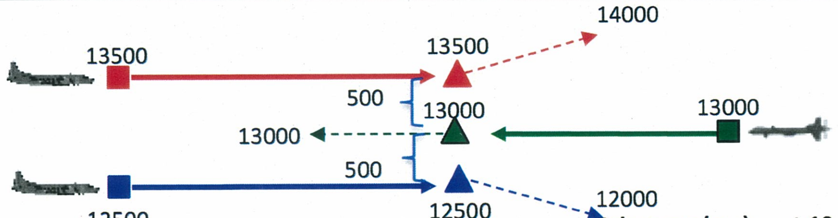
LOST LINK MISSION:
LL WPT 8

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1
☐ AR 2
☐ OFF
☑ ADS-B
☑ Stratway+
☑ Advisory
☑ RADAR
☐ CPDS
☐ AUTO
☑ TCAS
☑ TRACKER



Tolerance (sec): ± 10

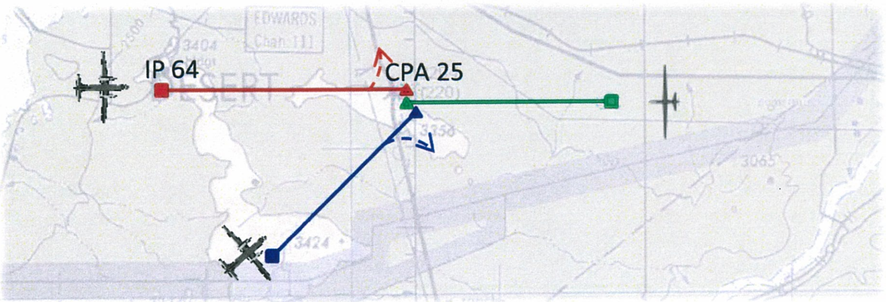
COMEX TIME: 0654

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP9	**N34° 54.63'**	**W117° 21.15'**	13000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	13000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 27	Version 9
Card#	**M59R**		Intruder 1

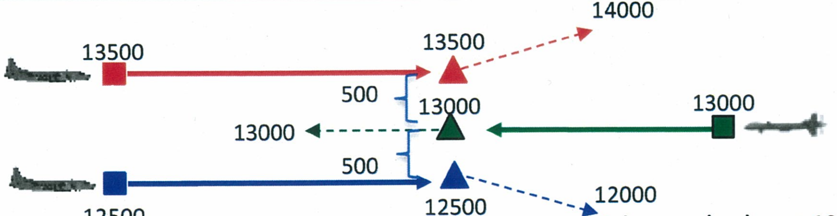


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**060**



Tolerance (sec): ± 10

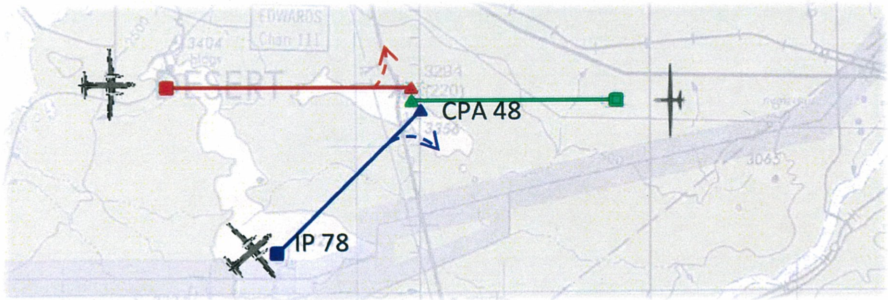
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP64	**N34° 55.12'**	**W117° 41.27'**	13500	9.0	**180**	
	N34° 55' 07.4"	**W117° 41' 16.0"**	0	078		
CPA25	**N34° 55.12'**	**W117° 30.29'**	13500	0.0	**180**	
	N34° 55' 07.4"	**W117° 30' 17.4"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	~~Aircraft: NASA 870~~ 865	S/N: 27	Version 9
Card# 12	**M59R**		Intruder 2

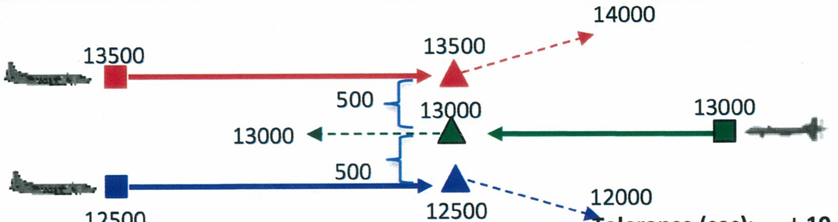


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**



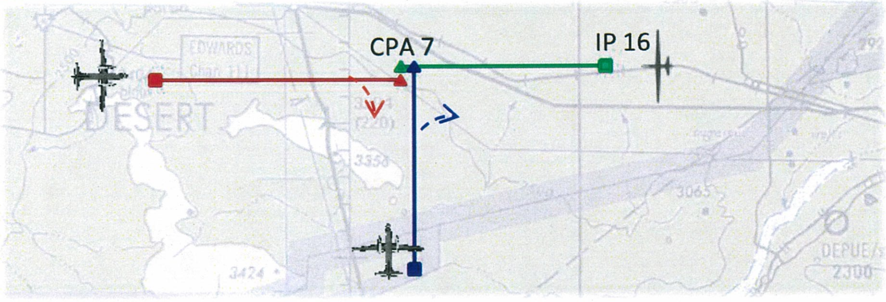
Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP78	**N34° 48.98'**	**W117° 36.33'**	12500	7.5	**150**	
	N34° 48' 58.7"	**W117° 36' 19.9"**	0	033		
CPA48	**N34° 54.28'**	**W117° 29.87'**	12500	0.0	**150**	
	N34° 54' 16.9"	**W117° 29' 51.9"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 48	Version 9

Card# 13	M59S	Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

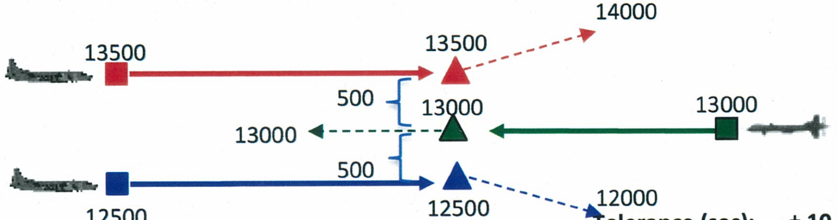
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

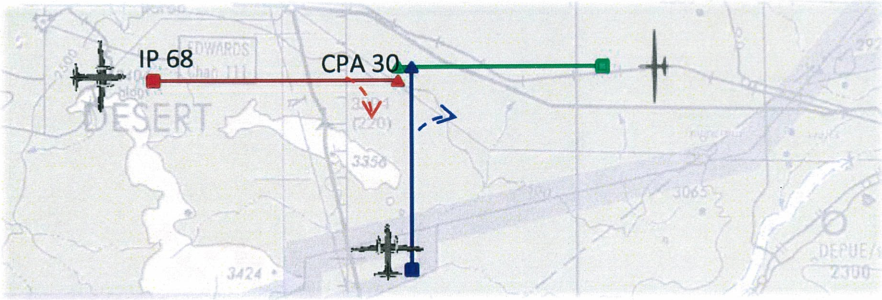
COMEX TIME: 0905 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	13000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	13000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 48	Version 9

Card#	M59S	Intruder 1

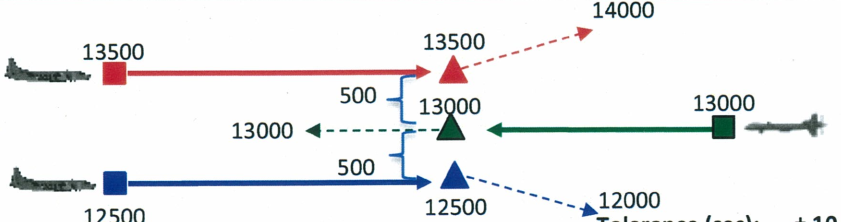


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	120



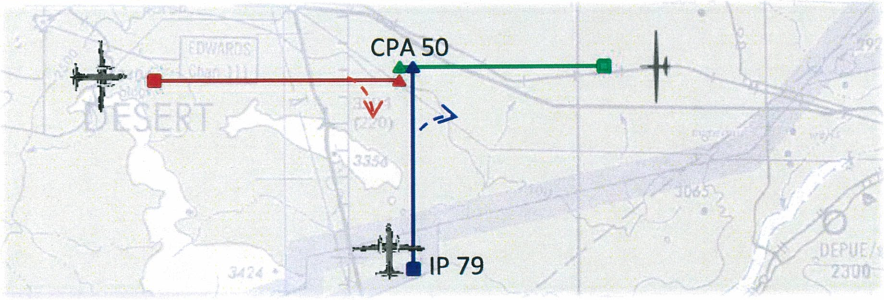
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	N34° 56.60'	W117° 38.60'	13500	9.0	180	
	N34° 56' 35.8"	W117° 38' 36.0"	0	078		
CPA30	N34° 56.60'	W117° 27.62'	13500	0.0	180	
	N34° 56' 35.8"	W117° 27' 37.2"	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: ~~NASA 870~~ 865	S/N: 48	Version 9
Card# 13	**M59S**		Intruder 2

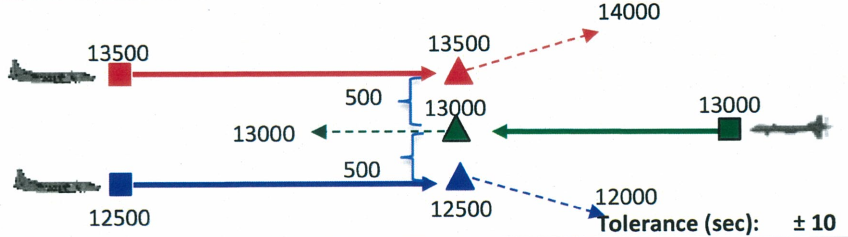


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**

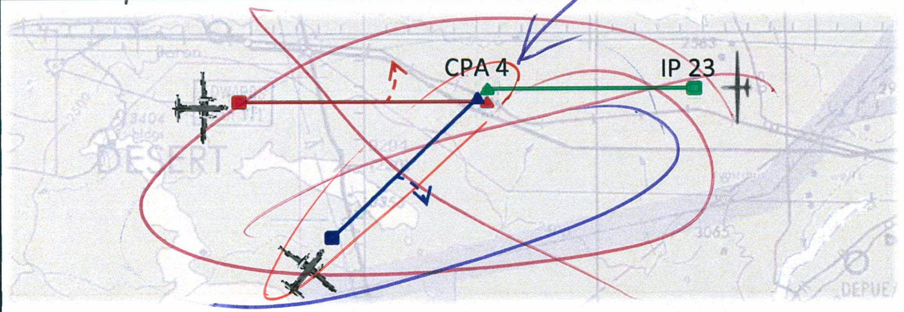


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP79	**N34° 49.59'**	**W117° 27.02'**	12500	7.5	**150**	
	N34° 49' 35.4"	**W117° 27' 01.1"**	0	348		
CPA50	**N34° 57.09'**	**W117° 27.02'**	12500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 01.1"**	0	348		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 70	Version 9
Card# 14	**M59T**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

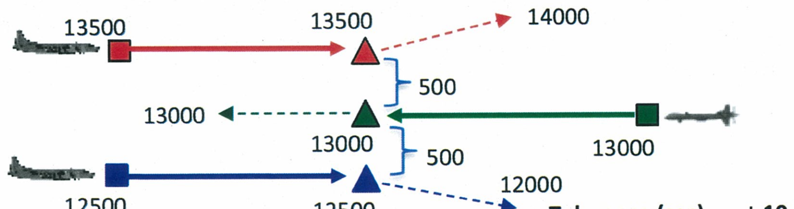
LOST LINK MISSION:
LL WPT 6

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

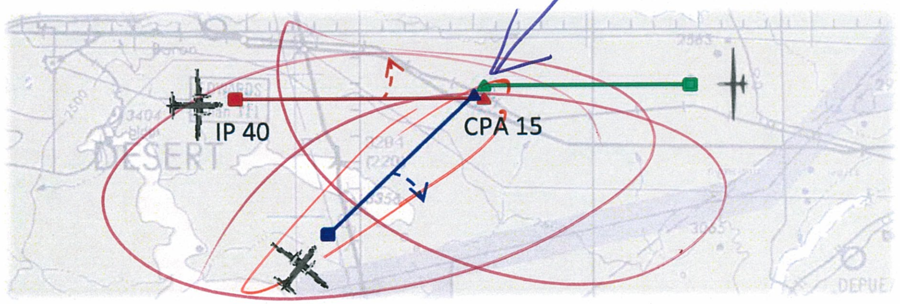
COMEX TIME: 8a15

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 70	Version 9
Card#	**M59T**		Intruder 1

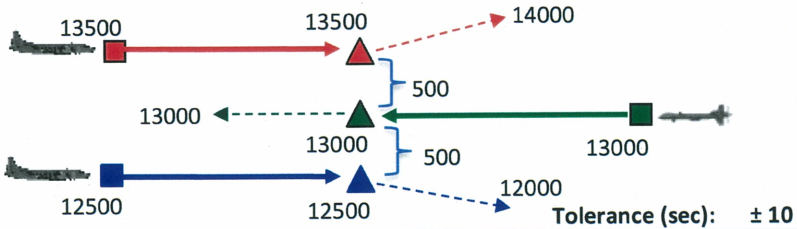


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	060



Tolerance (sec): ± 10

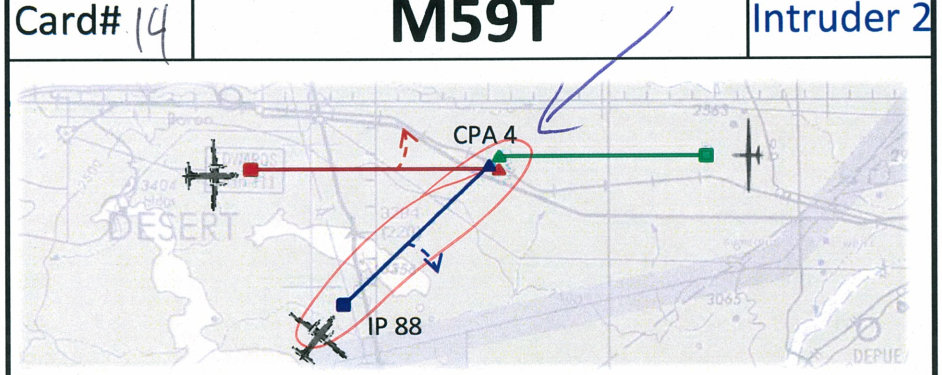
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP40	**N34° 53.12'**	**W117° 38.59'**	13500	9.0	**180**	
	N34° 53' 07.0"	**W117° 38' 35.5"**	0	078		
CPA15	**N34° 53.12'**	**W117° 27.62'**	13500	0.0	**180**	
	N34° 53' 07.0"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	~~Aircraft: NASA 870~~ 865	S/N: 70	Version 9
Card# 14	**M59T**		Intruder 2



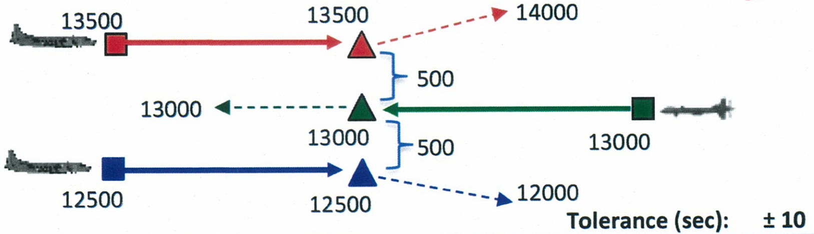
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	~~160~~

RT330



Tolerance (sec): ± 10

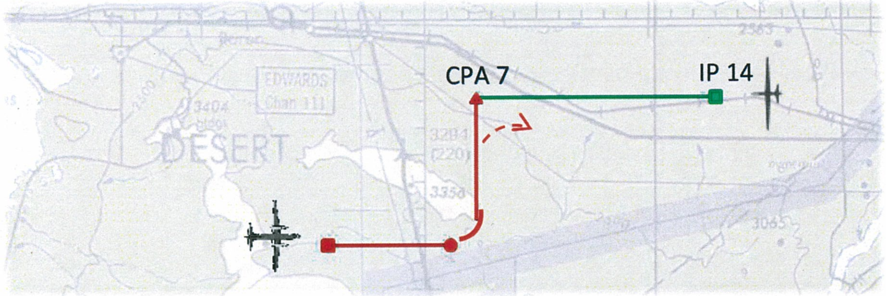
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP88	N34° 59.26'	W117° 20.73'	12500	7.5	150	
	N34° 59' 15.7"	W117° 20' 43.7"	0	033		
CPA46	N34° 53.96'	W117° 27.20'	12500	0.0	150	
	N34° 53' 57.5"	W117° 27' 11.7"	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 63	Version 9
Card# 15	**L12N**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

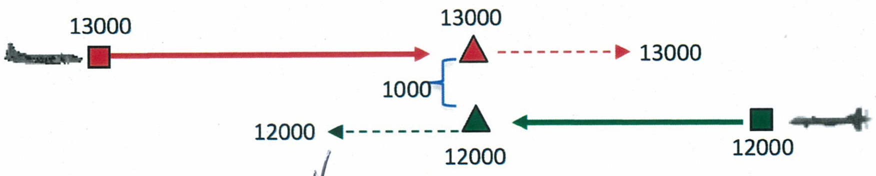
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER

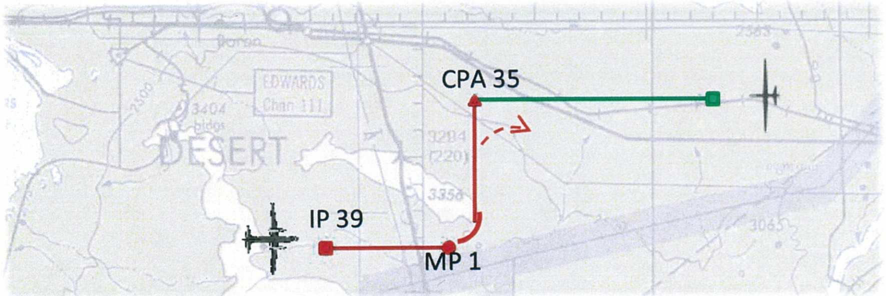


Tolerance (sec): ± 10

COMEX TIME: 0427 / 0943			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP14	**N34° 57.09'**	**W117° 16.95'**	12000	8.8	**150**	
	N34° 57' 05.4"	**W117° 16' 56.7"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Stratway+ guidance. 3.5 min

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 63	Version 9
Card#	**L12N**		Intruder 1



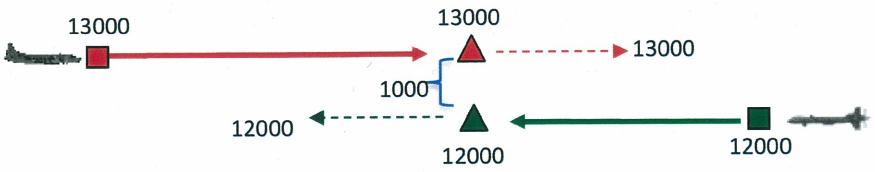
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

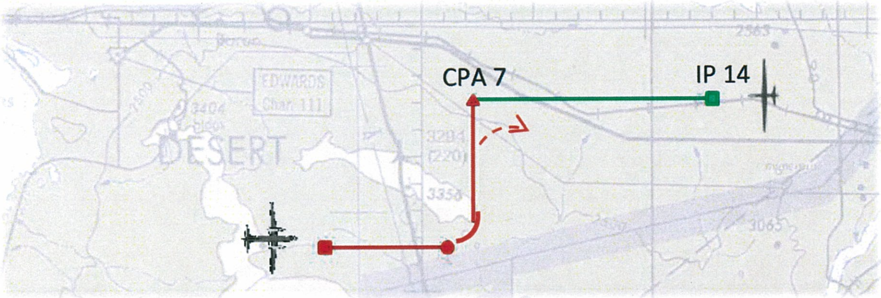
NOTE: Expect ownship maneuver. 3.5 min



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP39	**N34° 51.64'**	**W117° 34.27'**	13000	4.5	**180**	
	N34° 51' 38.1"	**W117° 34' 16.1"**	0	078		
MP1	**N34° 51.64'**	**W117° 28.78'**	13000	5.5	**180**	
	N34° 51' 38.1"	**W117° 28' 47.0"**	0	348		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	348		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 63	Version 9
Card# 16	**L12N**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

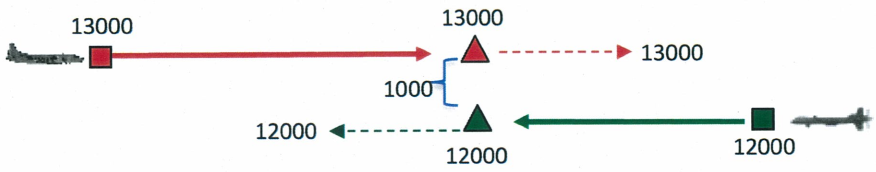
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

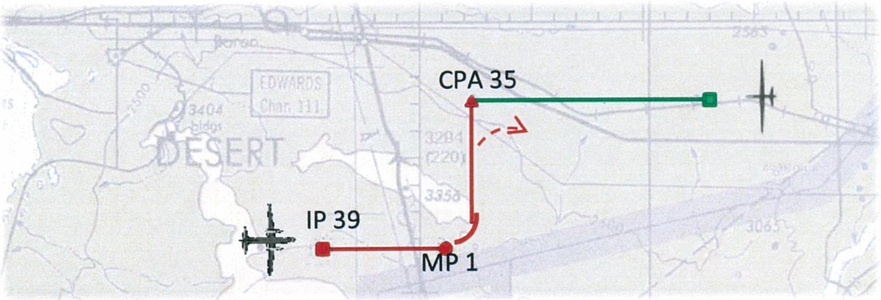


Tolerance (sec): ± 10

COMEX TIME: 0935			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP14	**N34° 57.09'**	**W117° 16.95'**	12000	8.8	**150**	
	N34° 57' 05.4"	**W117° 16' 56.7"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Stratway+ guidance. 3.5 min

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 63	Version 9
Card#	**L12N**		Intruder 1



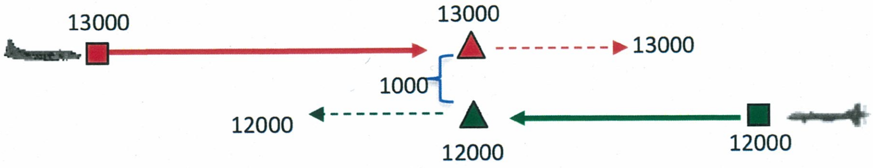
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

NOTE: Expect ownship maneuver. 3.5 min



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP39	**N34° 51.64'**	**W117° 34.27'**	13000	4.5	**180**	
	N34° 51' 38.1"	**W117° 34' 16.1"**	0	078		
MP1	**N34° 51.64'**	**W117° 28.78'**	13000	5.5	**180**	
	N34° 51' 38.1"	**W117° 28' 47.0"**	0	348		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	348		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 122	Version 9
Card# 22	L31G (90)		Ownship

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

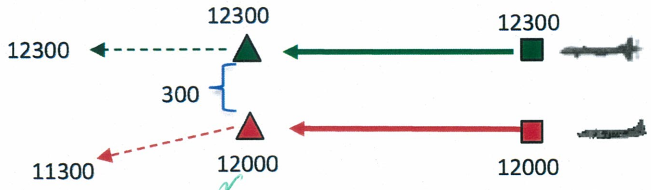
LOST LINK MISSION:
LL WPT 13

DECONFLICTION ALT:
13,000 ~~12000~~

ABORT PROCEDURE

12300	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
			☑ TRACKER



TA/RA B

Tolerance (sec): ± 10

COMEX TIME: 0953/1010

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	**N34° 57.89'**	**W117° 24.47'**	12300	15.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	228		
CPA9	**N34° 51.11'**	**W117° 38.81'**	12300	0.0	**150**	
	N34° 51' 06.3"	**W117° 38' 48.7"**	0	228		

IP TIME ADJUST:

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 122	Version 9
Card#	L31G (90)		Intruder 1

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
11000

ABORT PROCEDURE

11300	**180**

Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP43	**N34° 53.17'**	**W117° 21.12'**	12000	16.0	**160**	
	N34° 53' 10.1"	**W117° 21' 07.4"**	0	248		
CPA10	**N34° 50.66'**	**W117° 38.50'**	12000	0.0	**160**	
	N34° 50' 39.3"	**W117° 38' 30.2"**	0	248		

IP TIME ADJUST:

NOTE: 6 min legs, 90° BEARING, Turn Left heading 200 at CPA to maintain 0.5nm separation. Descend.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 125	Version 9
Card# 23	**L54G (90)**		Ownship

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

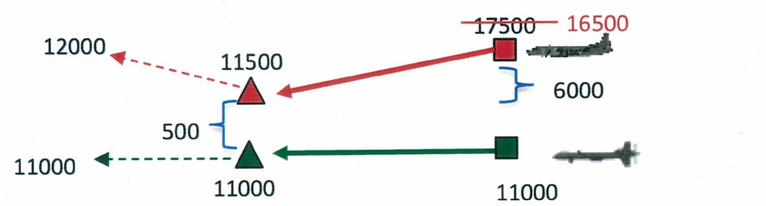
LOST LINK MISSION:
LL WPT 13

DECONFLICTION ALT:
11000

ABORT PROCEDURE

11000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS	☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 1022

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP2	**N34° 57.89'**	**W117° 24.47'**	11000	15.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	228		
CPA9	**N34° 51.11'**	**W117° 38.81'**	11000	0.0	**150**	
	N34° 51' 06.3"	**W117° 38' 48.7"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

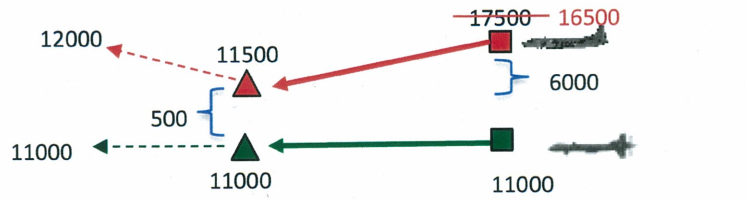
FT-3, Configuration 1a	Aircraft: N3GC C90	S/N: 125	Version 9
Card#	**L54G (90)**		Intruder 1

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**180**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP43	**N34° 53.17'**	**W117° 21.12'**	16500	16.0	**160**	
	N34° 53' 10.1"	**W117° 21' 07.4"**	-1000	248		
CPA10	**N34° 50.66'**	**W117° 38.50'**	11500	0.0	**160**	
	N34° 50' 39.3"	**W117° 38' 30.2"**	0	248		

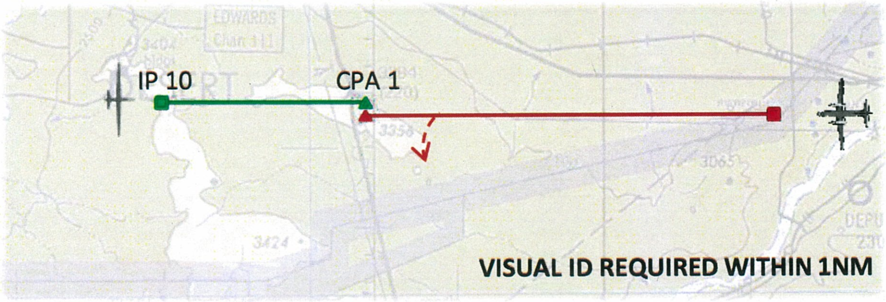
NOTE: 6 min legs, 90° BEARING, Turn Left heading 200 at CPA to maintain 0.5nm separation. Climb.

12.9 Flight 9 Redlined Flight Cards

20150721 Order of Cards Ver 1
Flight 9

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration					
1	72 - H42A	1	Stratway+	Follow Stratway+ Display		H/S Int
2	72 - H42A	2		Follow Stratway+ Display		H/S Int
3	73 - H42C	1		Follow Stratway+ Display		H/S Int
4	73 - H42C	2		Follow Stratway+ Display		H/S Int
5	74 - H42D	1		Follow Stratway+ Display		H/S Int
6	74 - H42D	2		Follow Stratway+ Display		H/S Int
7	75 - H42F	1		Follow Stratway+ Display		H/S Int
8	75 - H42F	2		Follow Stratway+ Display		H/S Int
9	76 - M59R	1		Follow Stratway+ Display	/865	H/S Int, Multiship
10	76 - M59R	2		Follow Stratway+ Display	/865	H/S Int, Multiship
11	77 - M59S	1		Follow Stratway+ Display	/865	H/S Int, Multiship
[redacted]	[redacted]	2		Follow Stratway+ Display	/865	H/S Int, Multiship
[redacted]	[redacted]	1		Follow Stratway+ Display	/865	H/S Int, Multiship
[redacted]	[redacted]	2		Follow Stratway+ Display	/865	H/S Int, Multiship
15	23 - L56C	2		Follow Stratway+ Display	865	
16	44 - L56D	2		Follow Stratway+ Display	865	
17	66 - L56F	2		Follow Stratway+ Display	865	
X	Altimeter Calibration				865	
18	31 - L32C	2	Stratway+	Follow Stratway+ Display	865	
19	51 - L32D	2		Follow Stratway+ Display	865	

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 72	Version 9
Card# 1	**H42A**	Ownship	



VISUAL ID REQUIRED WITHIN 1NM

LOST LINK MISSION:
LL WPT 2

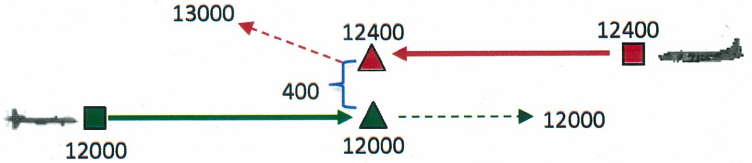
DECONFLICTION ALT:
12000

1. **TC announces COMEX time.**
2. **Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.**
3. **Aircraft on condition at least 2.5 minutes prior to CPA.**
4. **TC calls "terminate" when run complete.**
5. **TC announces next Card Number.**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



Tolerance (sec): ± 10

COMEX TIME: 0705

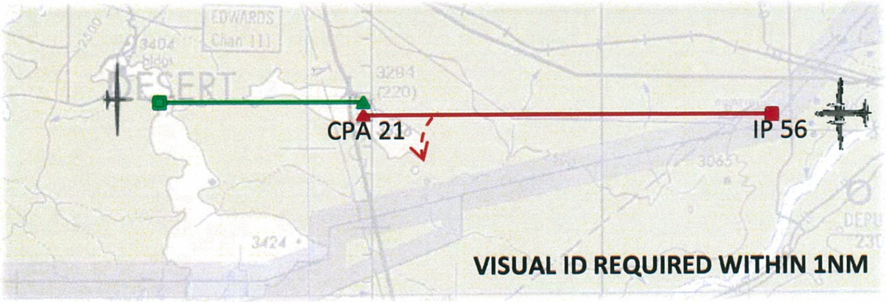
IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP10	**N34° 54.63'**	**W117° 39.44'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 39' 26.1"**	0	078		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

LATE Bu Contro
LT-055 CIT-050
TA
✓ 2:08

FT-3, Configuration 1a	Aircraft: 850	S/N: 72	Version 9
Card#	**H42A**	Intruder 1	



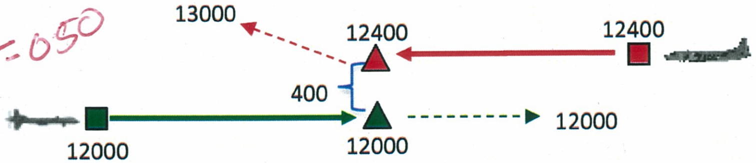
VISUAL ID REQUIRED WITHIN 1NM

1. **TC announces COMEX time.**
2. **Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.**
3. **Aircraft on condition at least 2.5 minutes prior to CPA.**
4. **TC calls "terminate" when run complete.**
5. **TC announces next Card Number.**

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**240**



Tolerance (sec): ± 10

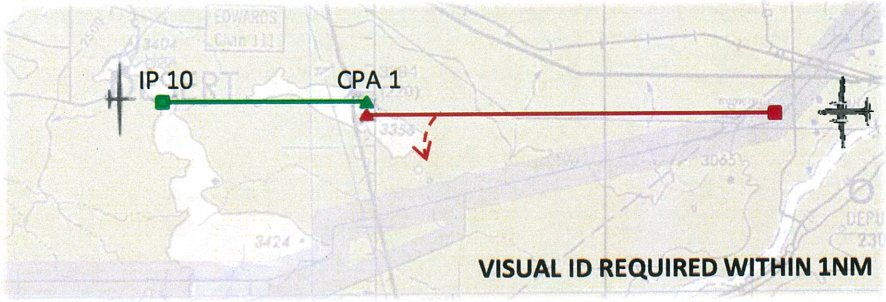
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP56	**N34° 54.14'**	**W117° 12.00'**	12400	15.0	**300**	
	N34° 54' 08.2"	**W117° 12' 00.0"**	0	258		
CPA21	**N34° 54.14'**	**W117° 30.29'**	12400	0.0	**300**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 72	Version 9
Card# 2	**H42A**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

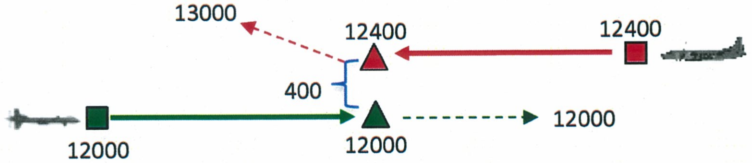
LOST LINK MISSION:
LL WPT 2

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER



Tolerance (sec): ± 10

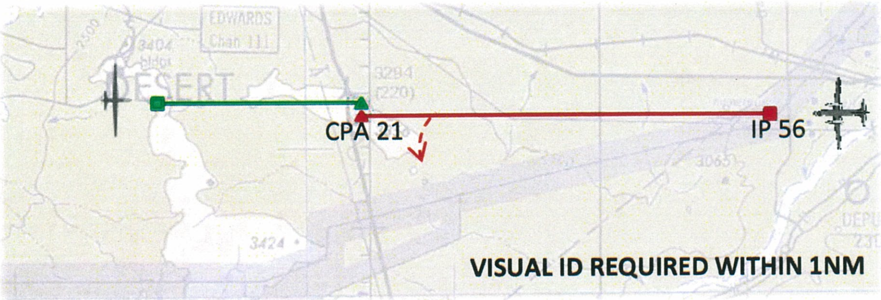
COMEX TIME: 0715

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP10	**N34° 54.63'**	**W117° 39.44'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 39' 26.1"**	0	078		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 72	Version 9
Card#	**H42A**		Intruder 1



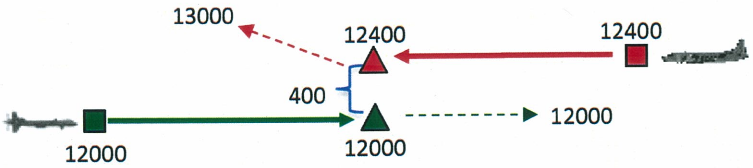
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**240**



Tolerance (sec): ± 10

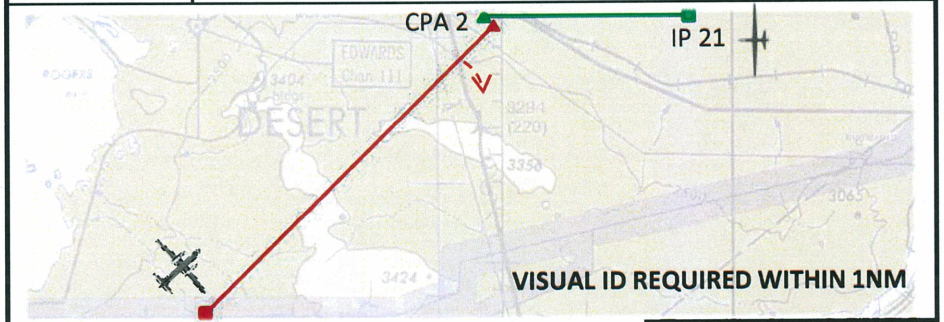
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP56	**N34° 54.14'**	**W117° 12.00'**	12400	15.0	**300**	
	N34° 54' 08.2"	**W117° 12' 00.0"**	0	258		
CPA21	**N34° 54.14'**	**W117° 30.29'**	12400	0.0	**300**	
	N34° 54' 08.2"	**W117° 30' 17.4"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 73	Version 9
Card# 3	**H42C**	Ownship	



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

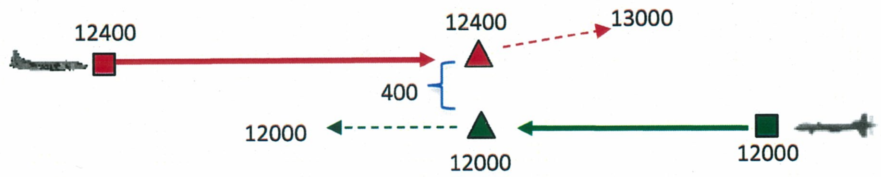
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

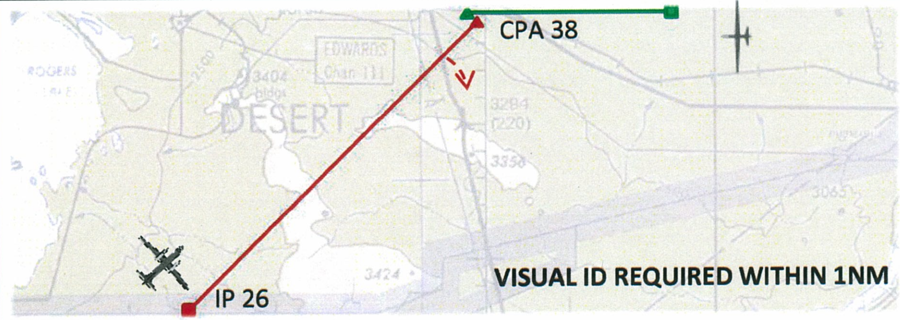
COMEX TIME: 0723

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP21	**N34° 59.12'**	**W117° 21.57'**	12000	7.5	**150**	
	N34° 59' 07.2"	**W117° 21' 33.9"**	0	258		
CPA2	**N34° 59.12'**	**W117° 30.72'**	12000	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 73	Version 9
Card#	**H42C**	Intruder 1	



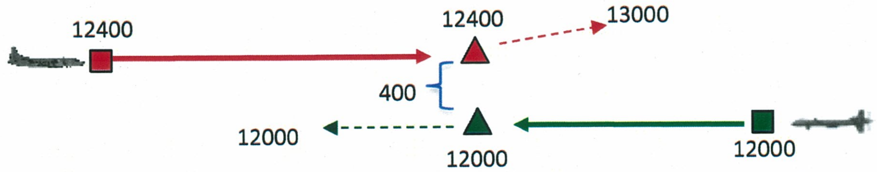
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

10 Sec Late ~ 30:54

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 10

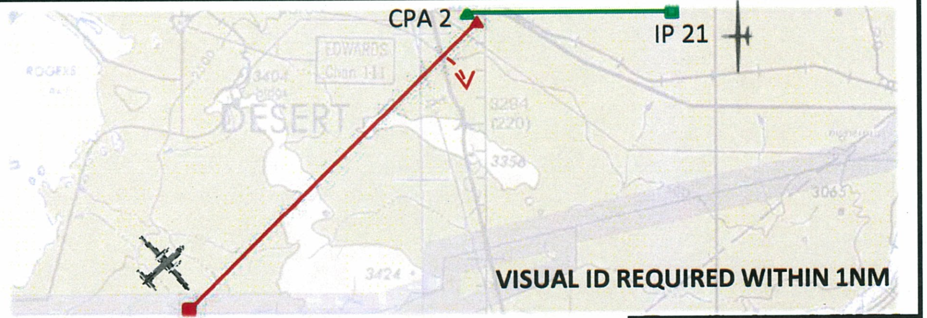
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP26	**N34° 48.17'**	**W117° 43.24'**	12400	15.0	**300**	
	N34° 48' 09.9"	**W117° 43' 14.3"**	0	033		
CPA38	**N34° 58.77'**	**W117° 30.29'**	12400	0.0	**300**	
	N34° 58' 46.3"	**W117° 30' 17.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 73	Version 9
Card# 4	**H42C**		Ownship



LOST LINK MISSION:
LL WPT 10

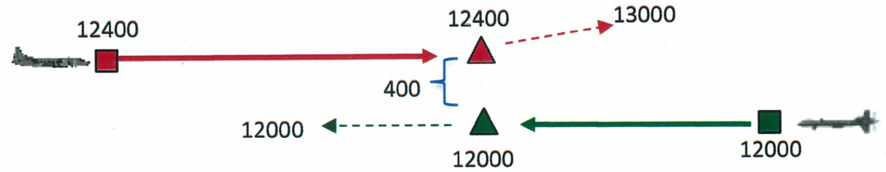
DECONFLICTION ALT:
12000

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER



Tolerance (sec): ± 10

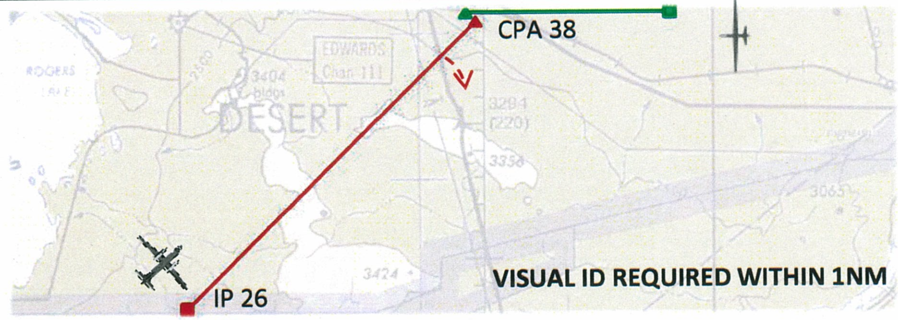
COMEX TIME: 0744

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP21	**N34° 59.12'**	**W117° 21.57'**	12000	7.5	**150**	
	N34° 59' 07.2"	**W117° 21' 33.9"**	0	258		
CPA2	**N34° 59.12'**	**W117° 30.72'**	12000	0.0	**150**	
	N34° 59' 07.2"	**W117° 30' 43.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 73	Version 9
Card#	**H42C**		Intruder 1



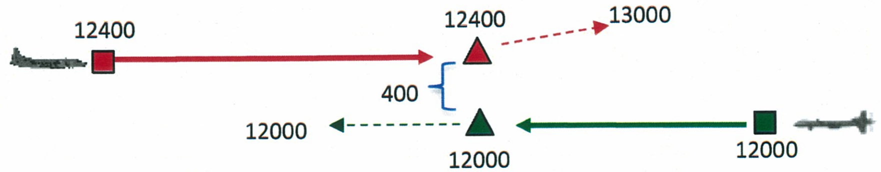
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

20sec Early

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	→ **120**



Tolerance (sec): ± 10

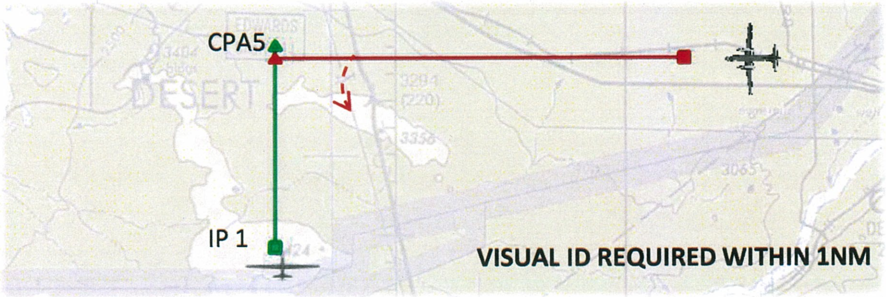
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP26	**N34° 48.17'**	**W117° 43.24'**	12400	15.0	**300**	
	N34° 48' 09.9"	**W117° 43' 14.3"**	0	033		
CPA38	**N34° 58.77'**	**W117° 30.29'**	12400	0.0	**300**	
	N34° 58' 46.3"	**W117° 30' 17.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 74	Version 9
Card# 5	**H42D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

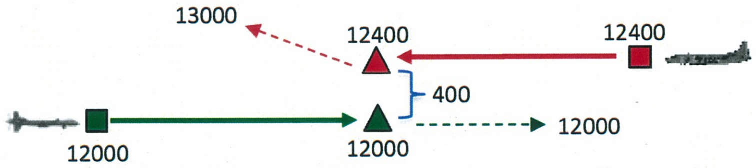
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☐ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

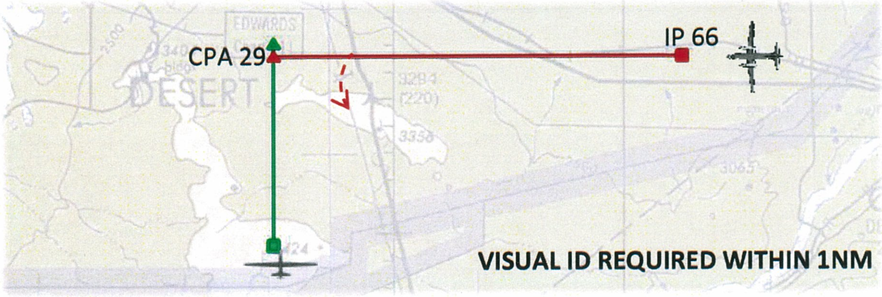
COMEX TIME: 07411

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 74	Version 9
Card#	**H42D**		Intruder 1

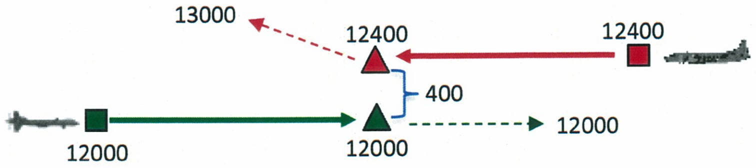


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	↰ **150**



Tolerance (sec): ± 10

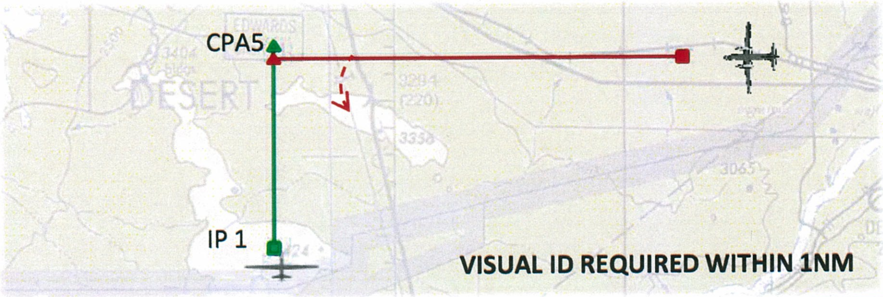
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP66	**N34° 56.56'**	**W117° 17.00'**	12400	15.0	**300**	
	N34° 56' 33.4"	**W117° 17' 00.1"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12400	0.0	**300**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 74	Version 9
Card# 6	**H42D**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

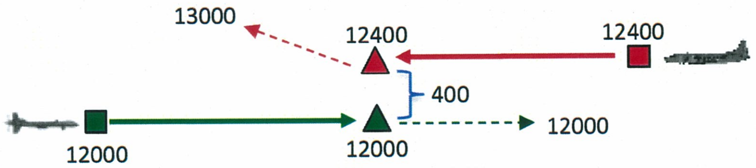
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☐ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER



Tolerance (sec): ± 10

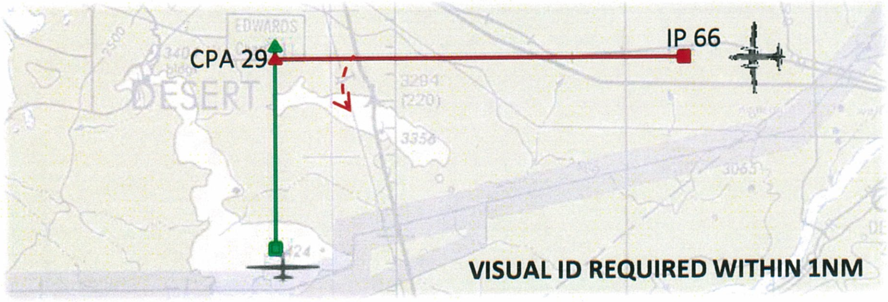
COMEX TIME: 0751

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

IP TIME ADJUST:

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 74	Version 9
Card#	**H42D**		Intruder 1



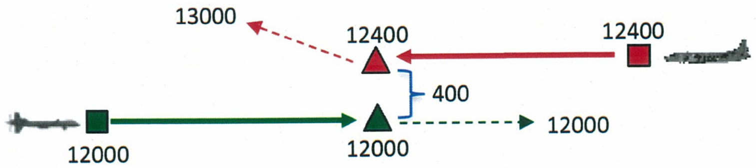
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

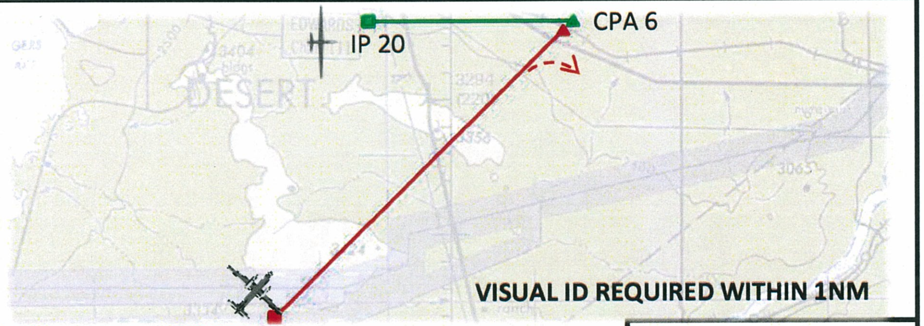
COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP66	**N34° 56.56'**	**W117° 17.00'**	12400	15.0	**300**	
	N34° 56' 33.4"	**W117° 17' 00.1"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12400	0.0	**300**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

IP TIME ADJUST:

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 75	Version 9
Card# 7	**H42F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

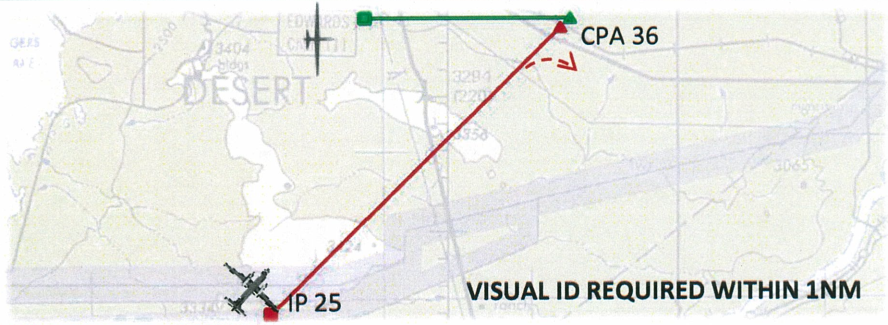
12000	**MAINTAIN HDG**

Tolerance (sec): ± 10

COMEX TIME: 0900			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 75	Version 9
Card#	**H42F**		Intruder 1

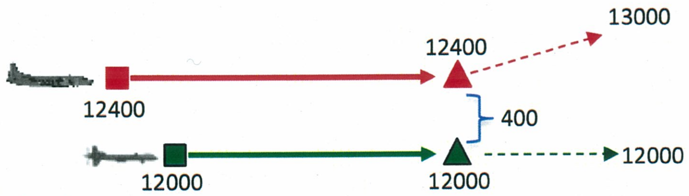


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

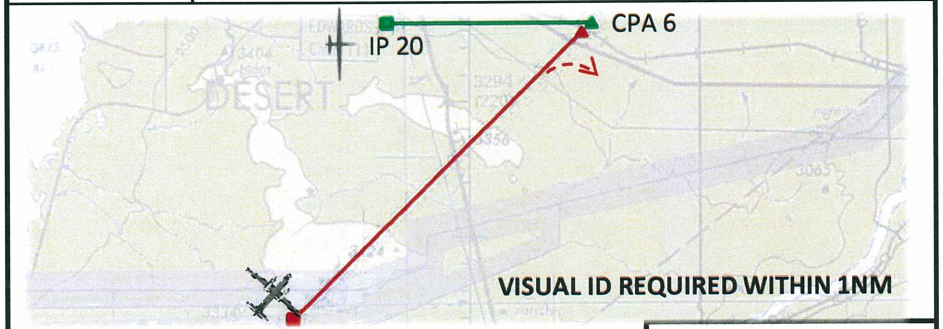


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP25	**N34° 46.94'**	**W117° 37.84'**	12400	15.0	**300**	
	N34° 46' 56.1"	**W117° 37' 50.3"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12400	0.0	**300**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 75	Version 9
Card# 8	**H42F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☑ TCAS	☐ TRACKER

Tolerance (sec): ± 10

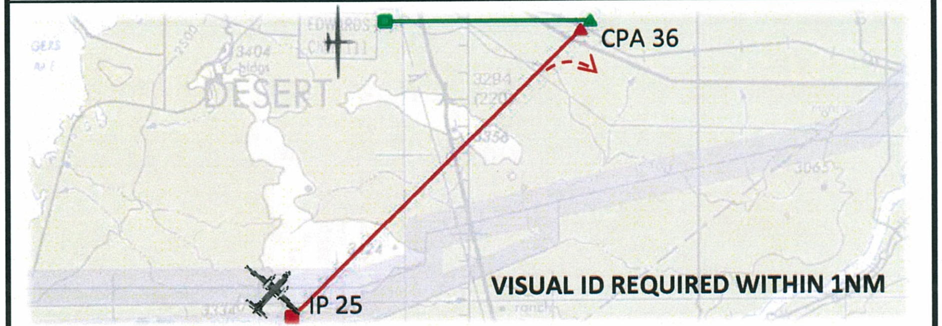
COMEX TIME: 0604

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 75	Version 9
Card#	**H42F**		Intruder 1



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

Tolerance (sec): ± 10

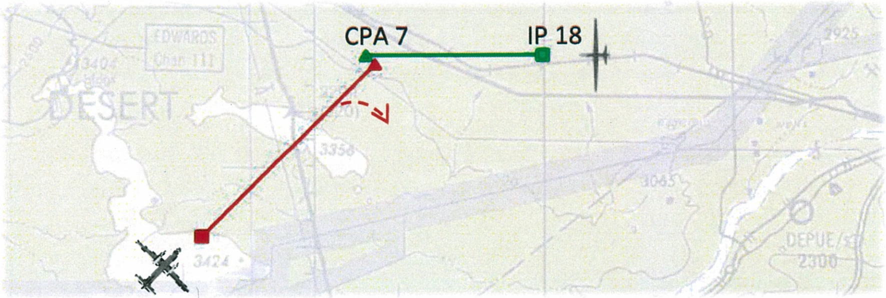
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP25	**N34° 46.94'**	**W117° 37.84'**	12400	15.0	**300**	
	N34° 46' 56.1"	**W117° 37' 50.3"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12400	0.0	**300**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 23	Version 9
Card# 15	**L56C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

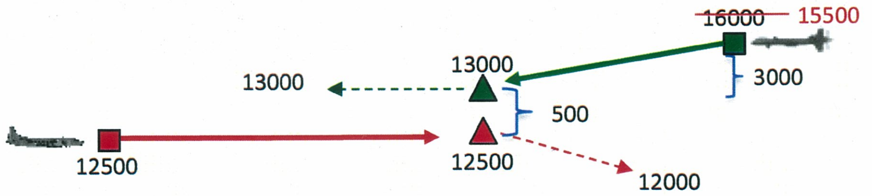
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS		
☐ OFF	☑ Advisory	☐ AUTO		
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER	

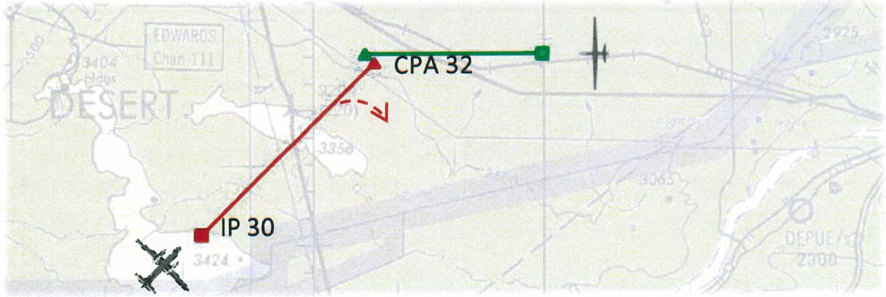


Tolerance (sec): ± 10

COMEX TIME: 0835 // 0926			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP18	**N34° 57.09'**	**W117° 19.69'**	15500	6.5	**130**	
	N34° 57' 05.4"	**W117° 19' 41.4"**	-1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**130**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 23	Version 9
Card#	**L56C**		Intruder 1

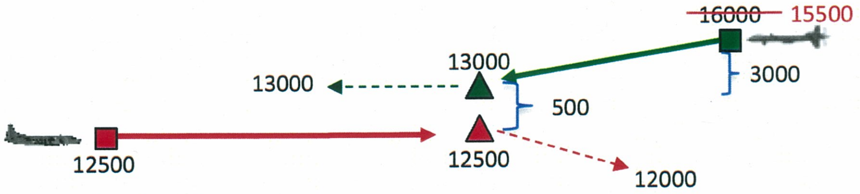


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**120**

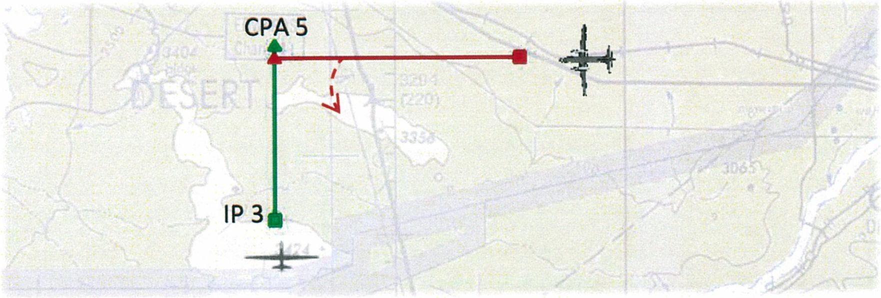


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12500	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12500	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 44	Version 9
Card# 6	**L56D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

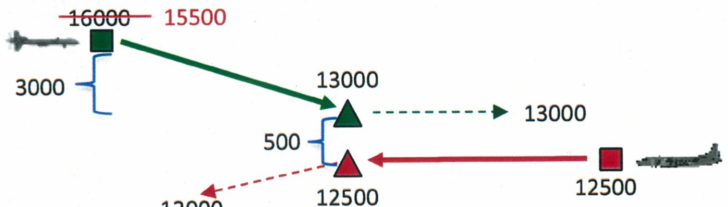
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

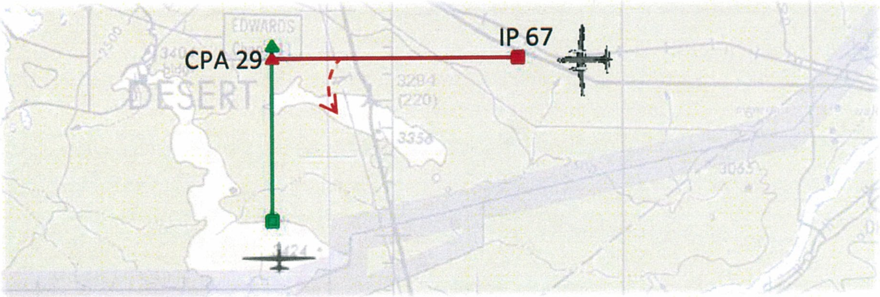
COMEX TIME: 0843 // 0935

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP3	**N34° 50.55'**	**W117° 35.30'**	15500	6.5	**130**	
	N34° 50' 33.0"	**W117° 35' 18.0"**	-1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**130**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 44	Version 9
Card#	**L56D**		Intruder 1

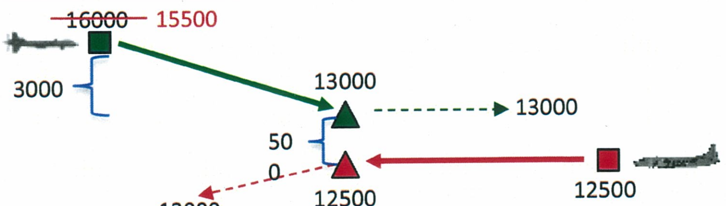


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**150**



Tolerance (sec): ± 10

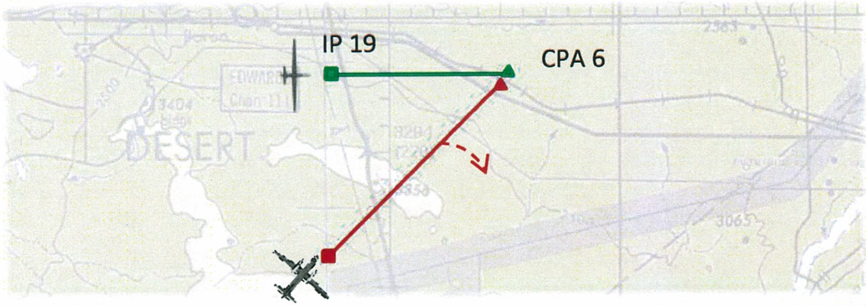
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 66	Version 9
Card# 17	**L56F**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

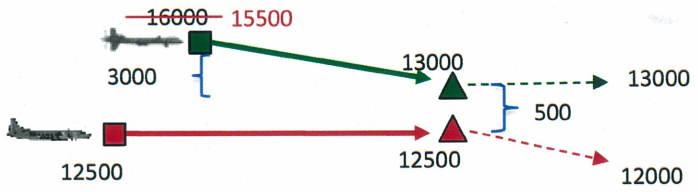
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 10

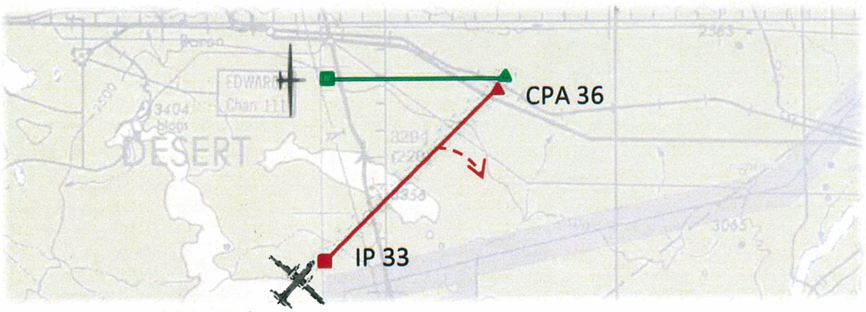
COMEX TIME: 0851 // 0944 // 0955

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP19	**N34° 57.89'**	**W117° 32.40'**	15500	6.5	**130**	
	N34° 57' 53.4"	**W117° 32' 24.1"**	-1000	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	13000	0.0	**130**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 66	Version 9
Card#	**L56F**		Intruder 1

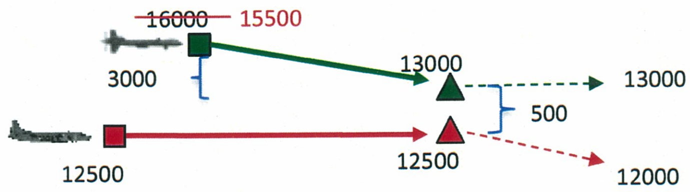


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	↗ **120**



Tolerance (sec): ± 10

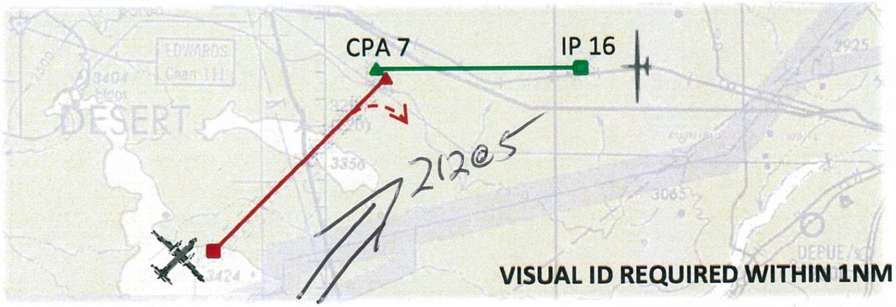
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	12500	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12500	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	**Aircraft: NASA 870**	**S/N: 31**	**Version 9**
Card# 18	**L32C**	Ownship	



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

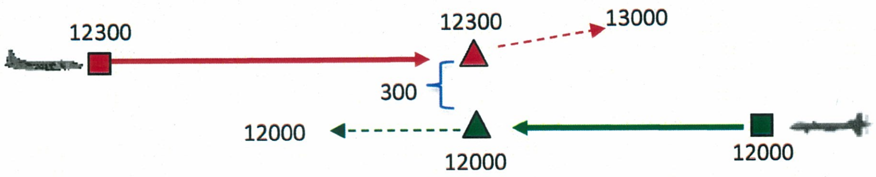
LOST LINK MISSION: LL WPT 9

DECONFLICTION ALT: 12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 8

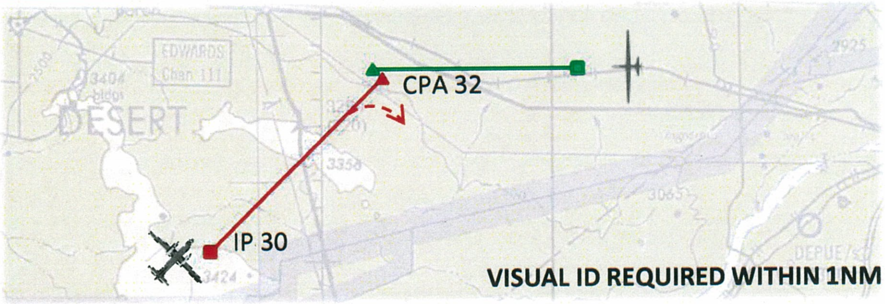
COMEX TIME: 0961

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	**Aircraft: NASA 865**	**S/N: 31**	**Version 9**
Card#	**L32C**	Intruder 1	



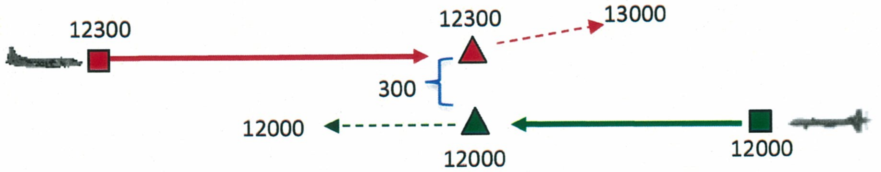
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 8

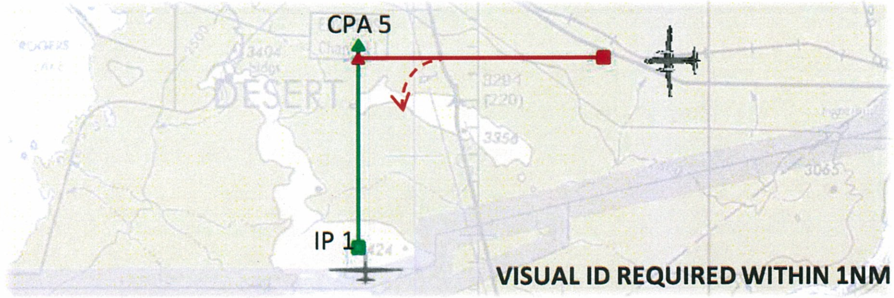
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	12300	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	12300	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 51	Version 9
Card# 9	**L32D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

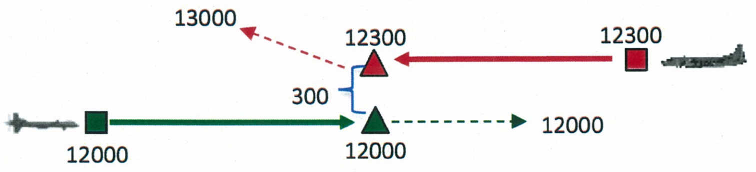
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER



Tolerance (sec): ± 5

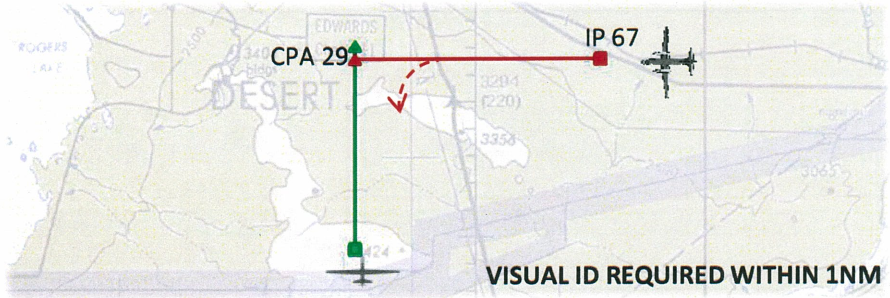
COMEX TIME: 0110

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 51	Version 9
Card#	**L32D**		Intruder 1

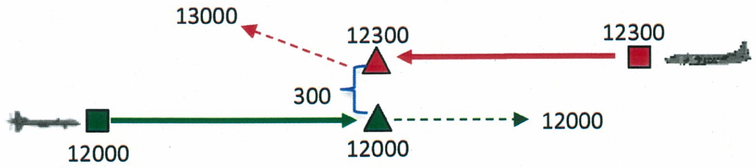


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 5

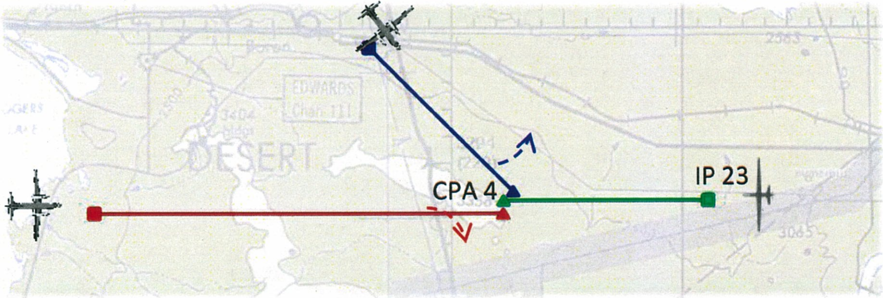
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12300	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12300	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 76	Version 9
Card# 9	**M59R**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

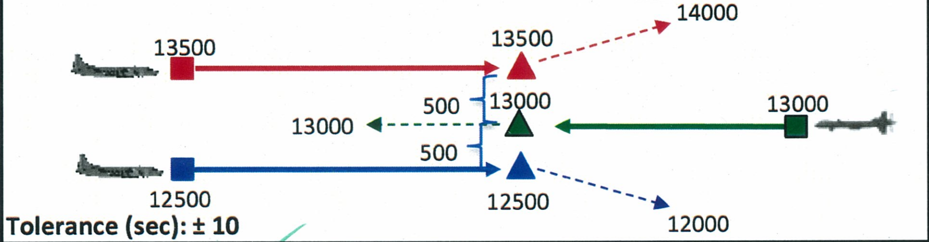
LOST LINK MISSION:
LL WPT 6

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☑ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☐ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



Tolerance (sec): ± 10

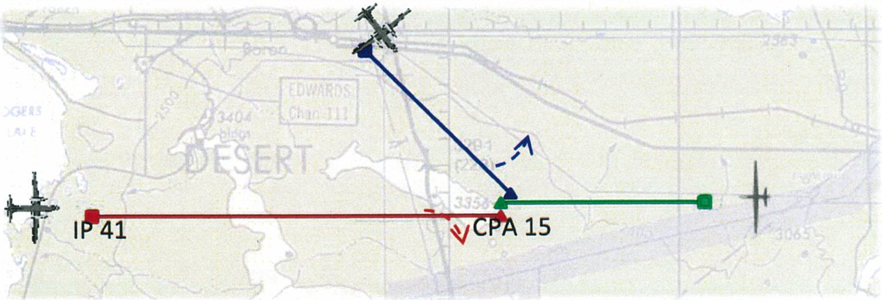
COMEX TIME: 1015

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 76	Version 9
Card#	**M59R**		Intruder 1

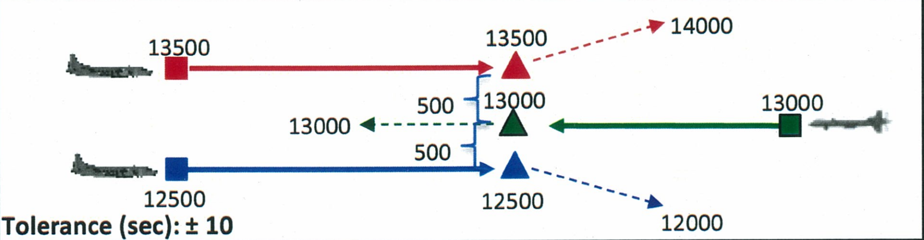


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**



Tolerance (sec): ± 10

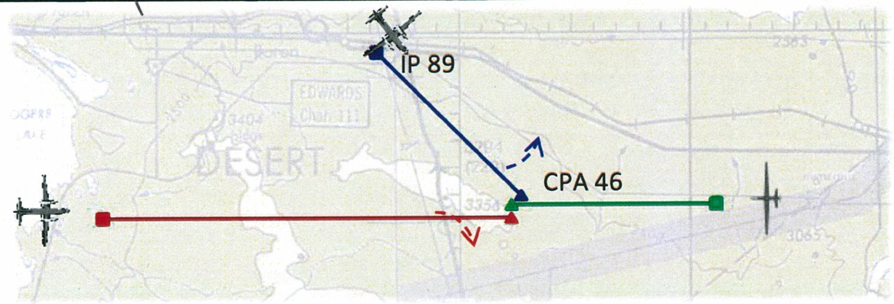
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP41	**N34° 53.12'**	**W117° 45.91'**	13500	15.0	**300**	
	N34° 53' 07.0"	**W117° 45' 54.4"**	0	078		
CPA15	**N34° 53.12'**	**W117° 27.62'**	13500	0.0	**300**	
	N34° 53' 07.0"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 76	Version 9
Card# 9	**M59R**		Intruder 2

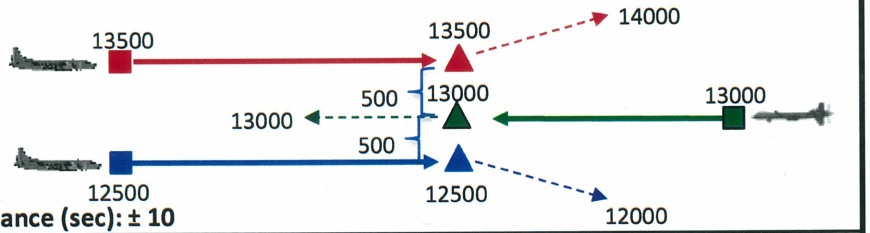


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

$\overline{12000}$	060



Tolerance (sec): ± 10

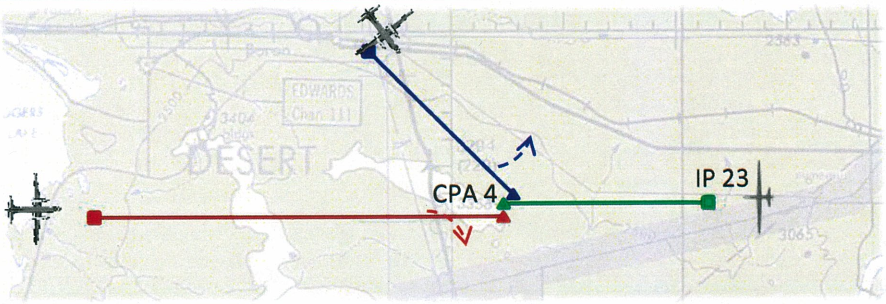
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP89	**N34° 59.26'**	**W117° 33.66'**	12500	7.5	**150**	
	N34° 59' 15.7"	**W117° 33' 39.6"**	0	123		
CPA46	**N34° 53.96'**	**W117° 27.20'**	12500	0.0	**150**	
	N34° 53' 57.5"	**W117° 27' 11.7"**	0	123		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 76	Version 9
Card# 10	**M59R**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

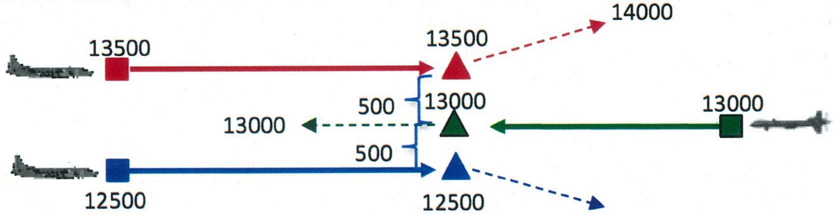
LOST LINK MISSION:
LL WPT 6

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER



Tolerance (sec): ± 10

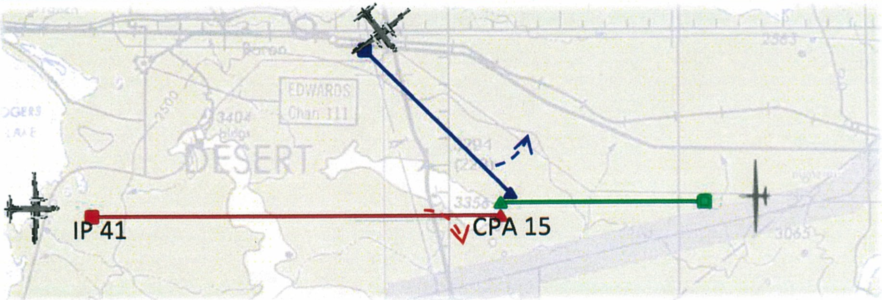
COMEX TIME: 1025

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

IP TIME ADJUST:

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 76	Version 9
Card#	**M59R**		Intruder 1

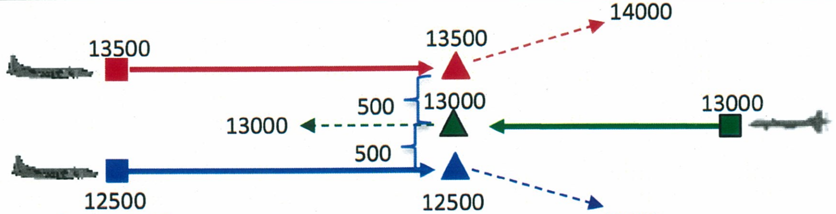


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**



Tolerance (sec): ± 10

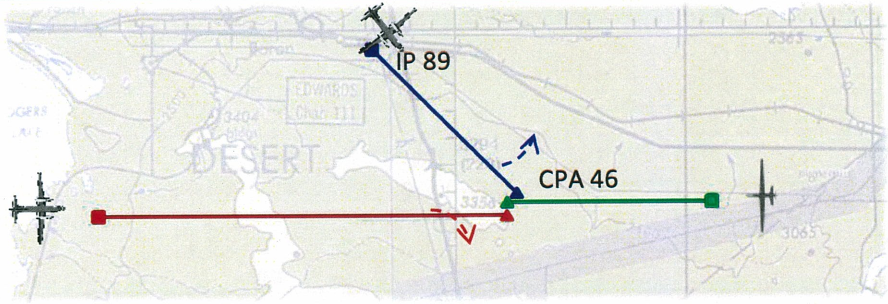
COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP41	**N34° 53.12'**	**W117° 45.91'**	13500	15.0	**300**	
	N34° 53' 07.0"	**W117° 45' 54.4"**	0	078		
CPA15	**N34° 53.12'**	**W117° 27.62'**	13500	0.0	**300**	
	N34° 53' 07.0"	**W117° 27' 37.2"**	0	078		

IP TIME ADJUST:

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 76	Version 9
Card# 10	**M59R**		Intruder 2

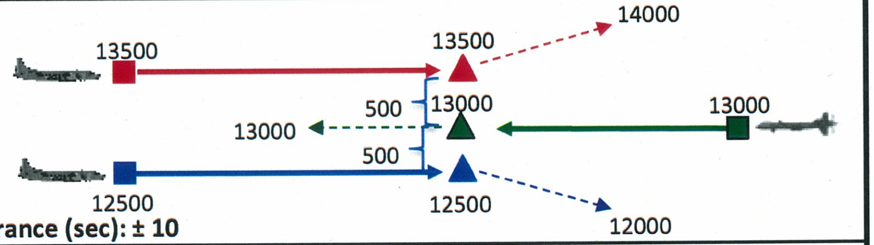


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	← **060**



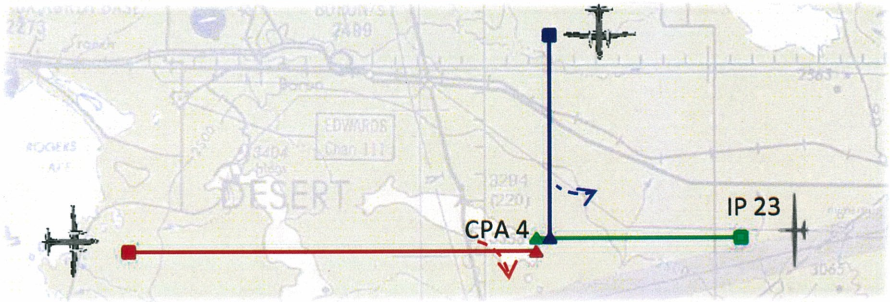
Tolerance (sec): ± 10

COMEX TIME:	IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP89	**N34° 59.26'**	**W117° 33.66'**	12500	7.5	**150**	
	N34° 59' 15.7"	**W117° 33' 39.6"**	0	123		
CPA46	**N34° 53.96'**	**W117° 27.20'**	12500	0.0	**150**	
	N34° 53' 57.5"	**W117° 27' 11.7"**	0	123		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 77	Version 9
Card# 11	**M59S**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

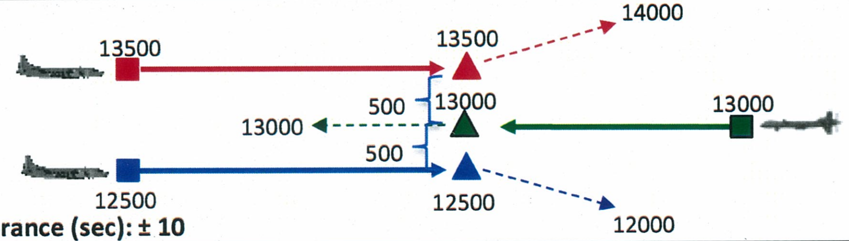
LOST LINK MISSION:
LL WPT 6

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☑ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☑ TCAS ☑ TRACKER

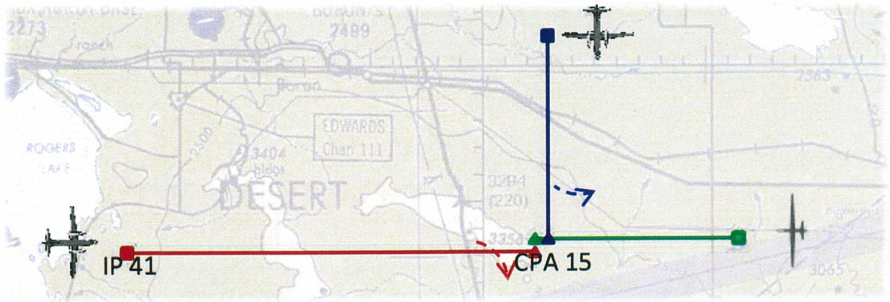


Tolerance (sec): ± 10

COMEX TIME: 1035			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP23	**N34° 53.61'**	**W117° 18.48'**	13000	7.5	**150**	
	N34° 53' 36.6"	**W117° 18' 28.6"**	0	258		
CPA4	**N34° 53.61'**	**W117° 27.62'**	13000	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Use Stratway+ display.

FT-3, Configuration 1a	Aircraft: 850	S/N: 77	Version 9
Card#	**M59S**		Intruder 1

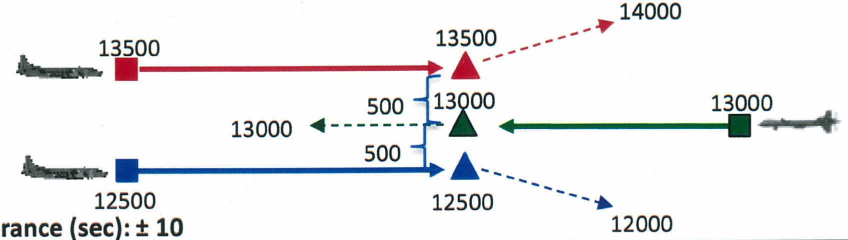


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**120**

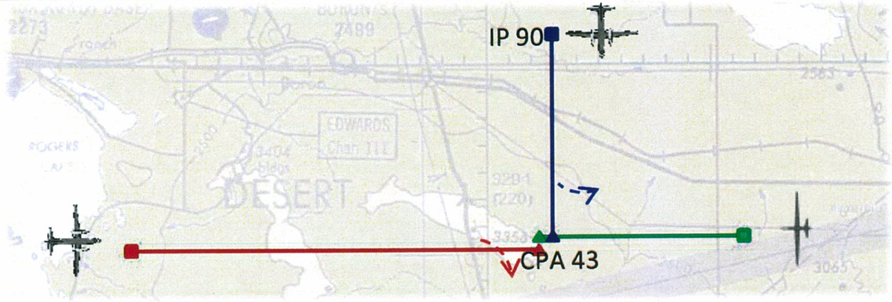


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP41	**N34° 53.12'**	**W117° 45.91'**	13500	15.0	**300**	
	N34° 53' 07.0"	**W117° 45' 54.4"**	0	078		
CPA15	**N34° 53.12'**	**W117° 27.62'**	13500	0.0	**300**	
	N34° 53' 07.0"	**W117° 27' 37.2"**	0	078		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 77	Version 9
Card# 11	**M59S**		Intruder 2

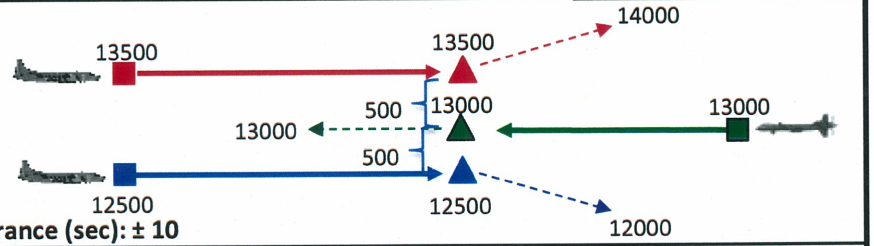


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**060**



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP90	**N35° 01.11'**	**W117° 27.02'**	12500	7.5	**150**	
	N35° 01' 06.6"	**W117° 27' 01.1"**	0	168		
CPA43	**N34° 53.61'**	**W117° 27.02'**	12500	0.0	**150**	
	N34° 53' 36.6"	**W117° 27' 01.1"**	0	168		

NOTE: Expect Ikhana maneuver.

12.10 Flight 10 Redlined Flight Cards

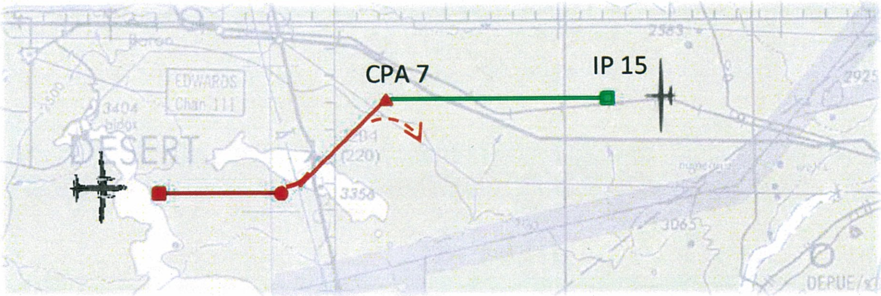
20150722

Order of Cards
Flight 10

Ver 1

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
X	Altimeter Calibration				865	
1	61 - L12E	2		Follow Autoreslover Guidance	865	
2	41 - L12M	2		Follow Autoreslover Guidance	865	
3	63 - L12N	2		Follow Autoreslover Guidance	865	
4	13 - L14A	2		Follow Autoreslover Guidance	865	Wind adjust
5	35 - L14C	2		Follow Autoreslover Guidance	865	Wind adjust
6	55 - L14D	2		Follow Autoreslover Guidance	865	Wind adjust
7	15 - L15A	2		Follow Autoreslover Guidance	865	Wind adjust
8	37 - L15C	2		Follow Autoreslover Guidance	865	Wind adjust
9	57 - L15D	2	XML Change	Follow Autoreslover Guidance	865	Wind adjust
10	11 - L13A	2		Follow Autoreslover Guidance	865	Wind adjust
11	33 - L13C	2		Follow Autoreslover Guidance	865	Wind adjust
12	53 - L13D	2		Follow Autoreslover Guidance	865	Wind adjust
		2		Follow Autoreslover Guidance	865	Wind adjust
		2		Follow Autoreslover Guidance	865	Wind adjust
		2	XML Change	Follow Autoreslover Guidance	865	Wind adjust
16	18 - L12A	1		None - Fly Through	865	
17	29 - L12C	1		None - Fly Through	865	
18	49 - L12D	1		None - Fly Through	865	
19	18 - L12A	1		None - Fly Through	865	
20	29 - L12C	1		None - Fly Through	865	
		1		None - Fly Through	865	

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:41	Version 9
Card# 2	**L12M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

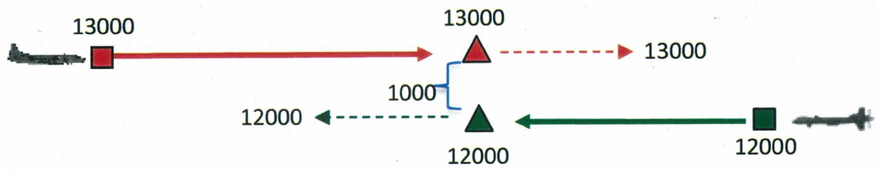
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

$\overline{12000}$	MAINTAIN HDG

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



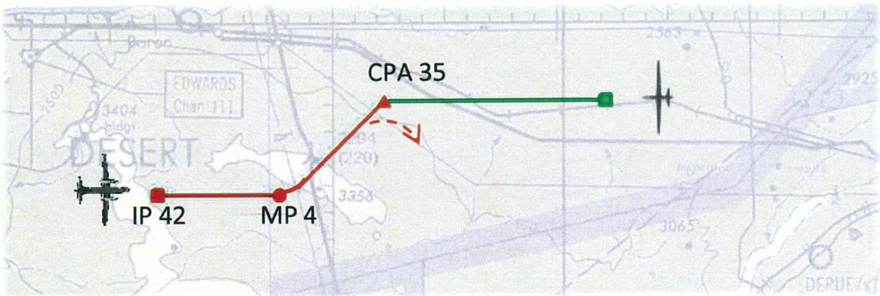
Tolerance (sec): ± 10

COMEX TIME: 0635			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP15	**N34° 57.09'**	**W117° 17.71'**	12000	8.1	**150**	
	N34° 57' 05.4"	**W117° 17' 42.4"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance. 3.25 min

---

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:41	Version 9
Card#	**L12M**		Intruder 1



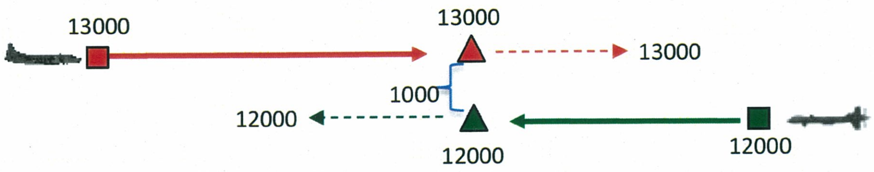
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

$\underline{13000}$	↷ 120

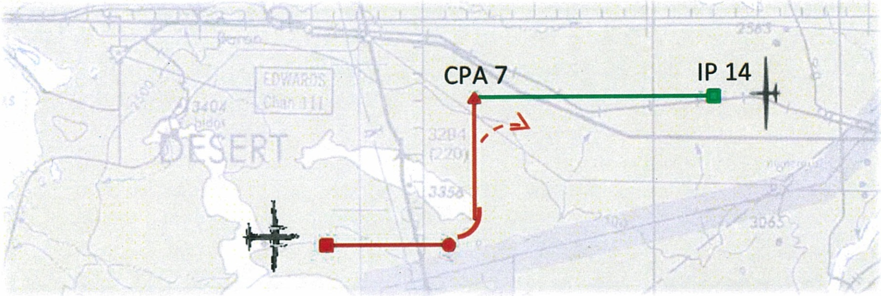
NOTE: Expect ownship maneuver. 3.25 min



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP42	**N34° 53.63'**	**W117° 37.81'**	13000	4.5	**180**	
	N34° 53' 37.7"	**W117° 37' 48.7"**	0	078		
MP4	**N34° 53.63'**	**W117° 32.33'**	13000	5.2	**180**	
	N34° 53' 37.7"	**W117° 32' 19.5"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:63	Version 9
Card# 3	**L12N**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

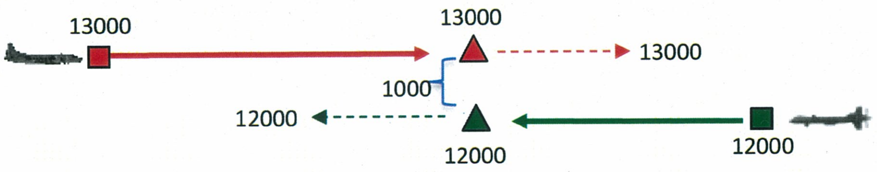
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER



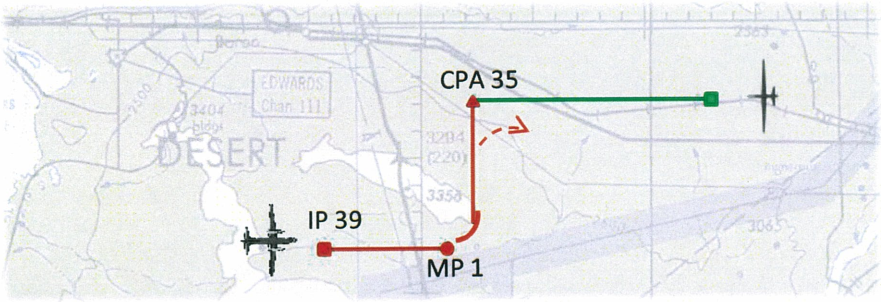
Tolerance (sec): ± 10

COMEX TIME: 0645

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	TIME HACK
IP14	**N34° 57.09'**	**W117° 16.95'**	12000	8.8	**150**	
	N34° 57' 05.4"	**W117° 16' 56.7"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance. 3.5 min

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:63	Version 9
Card#	**L12N**		Intruder 1



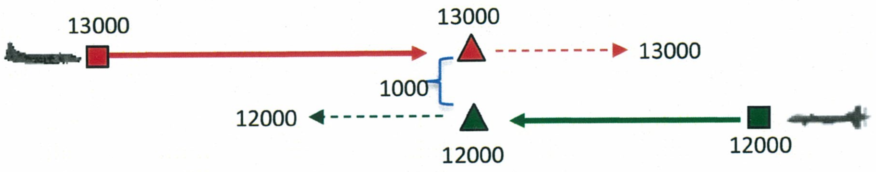
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

NOTE: Expect ownship maneuver. 3.5 min

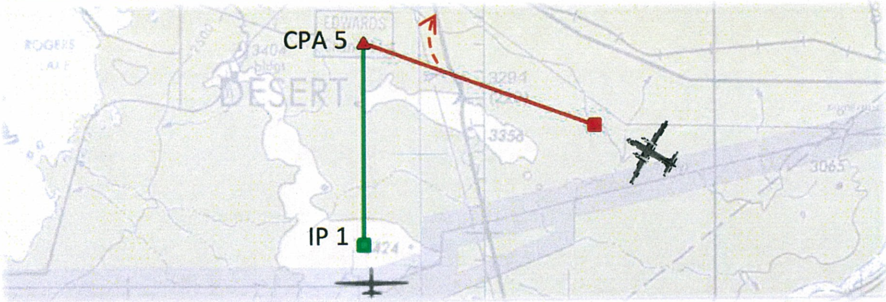


Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	TIME HACK
IP39	**N34° 51.64'**	**W117° 34.27'**	13000	4.5	**180**	
	N34° 51' 38.1"	**W117° 34' 16.1"**	0	078		
MP1	**N34° 51.64'**	**W117° 28.78'**	13000	5.5	**180**	
	N34° 51' 38.1"	**W117° 28' 47.0"**	0	348		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	348		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:61	Version 9
Card# 1	**L12E**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

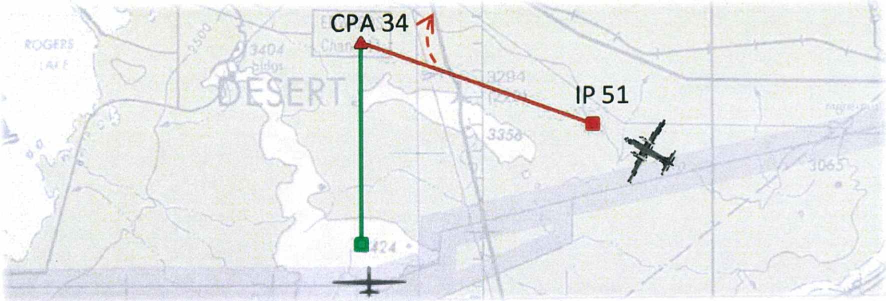
☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER

Tolerance (sec): ± 10

COMEX TIME: 0655			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:61	Version 9
Card#	**L12E**		Intruder 1

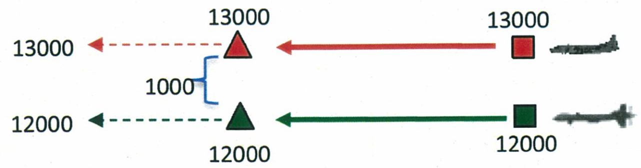


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**030**

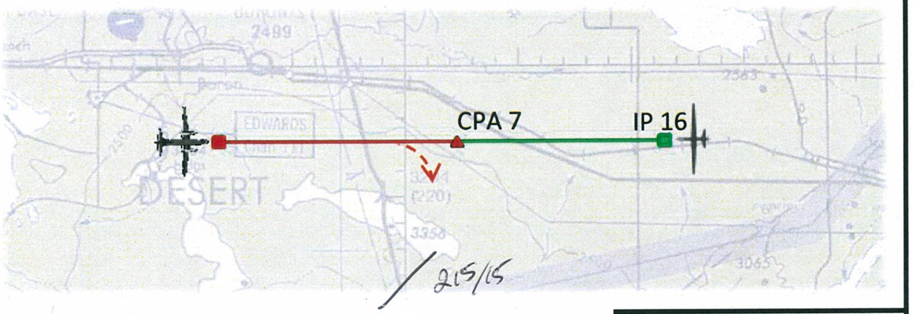


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP51	**N34° 53.97'**	**W117° 24.98'**	13000	9.0	**180**	
	N34° 53' 58.3"	**W117° 24' 58.9"**	0	278		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**180**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	278		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:13	Version 9
Card# 4	**L14A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

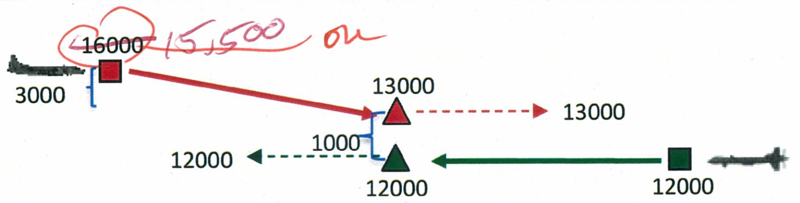
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1
☐ AR 2
☐ Stratway+
☐ CPDS
☐ OFF
☑ Advisory
☐ AUTO
☑ ADS-B
☐ RADAR
☐ TCAS
☐ TRACKER



Tolerance (sec): ± 10

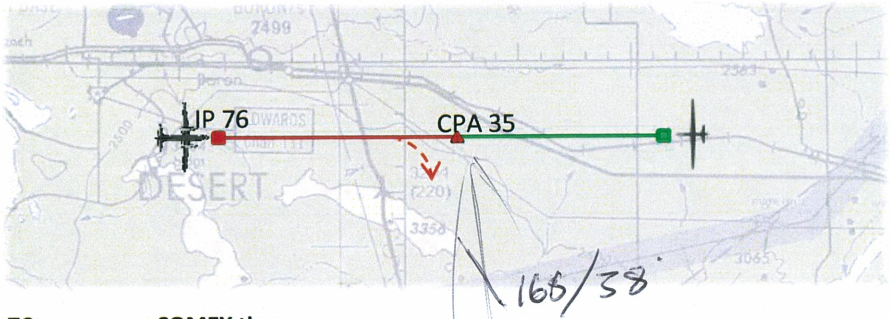
COMEX TIME: 0705

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:13	Version 9
Card#	**L14A**		Intruder 1

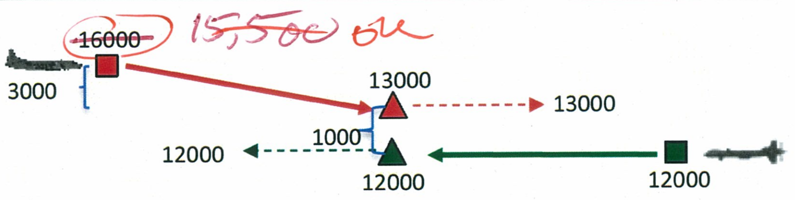


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	⤻ **120**



Tolerance (sec): ± 10

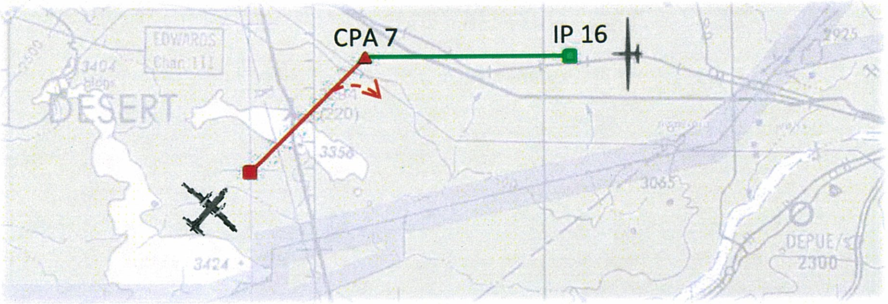
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP76	**N34° 57.09'**	**W117° 38.19'**	~~16000~~	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	-1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:35	Version 9
Card# 5	**L14C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

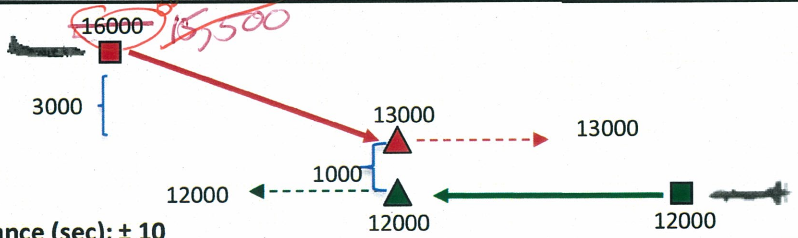
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Strategy+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



Tolerance (sec): ± 10

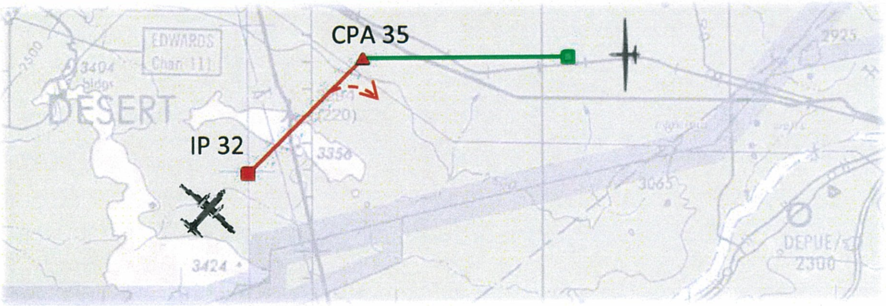
COMEX TIME: 0715

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:35	Version 9
Card#	**L14C**		Intruder 1

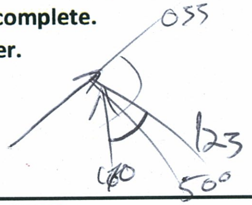


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

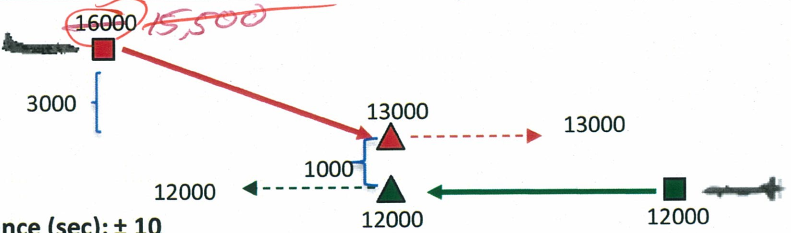
DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



OK



Tolerance (sec): ± 10

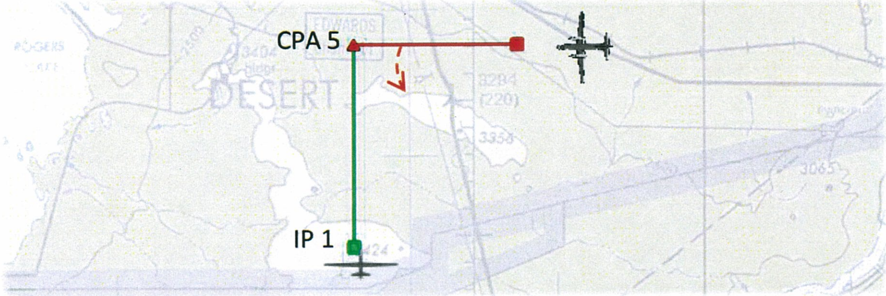
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP32	**N34° 50.97'**	**W117° 35.08'**	~~16000~~	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	-1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	13000	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:55	Version 9
Card# 6	**L14D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

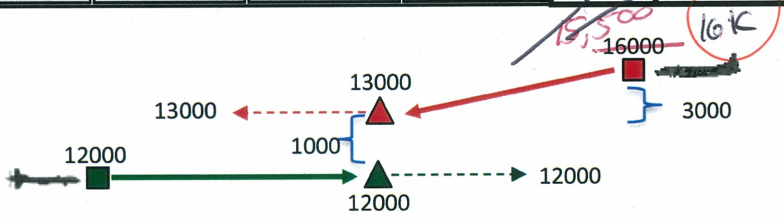
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



Tolerance (sec): ± 10

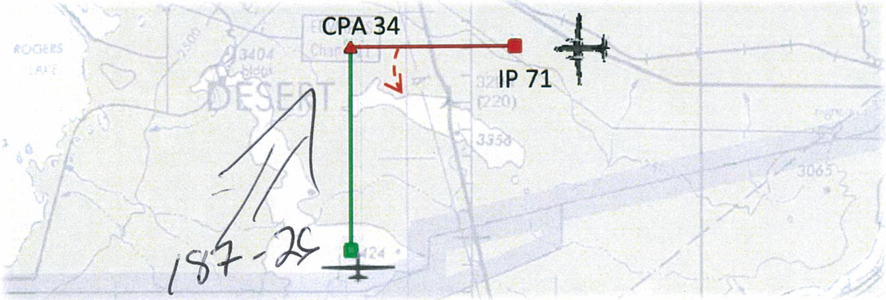
COMEX TIME: 0725

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:55	Version 9
Card#	**L14D**		Intruder 1



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

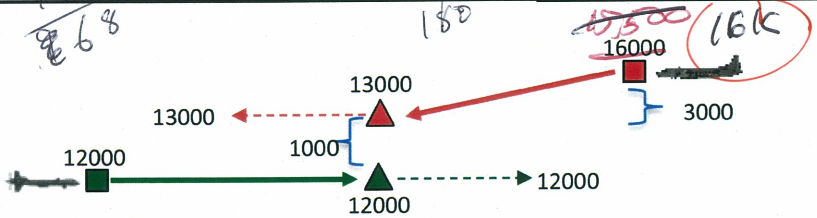
13000	**150**

~~0~~58
180

2~~8~~48
180
~~0~~68

250

180



Tolerance (sec): ± 10

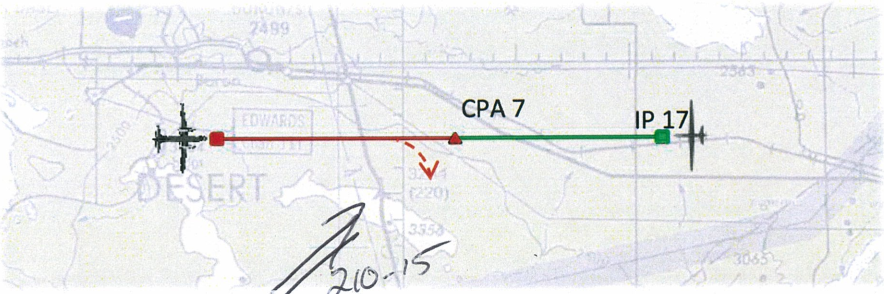
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP71	**N34° 57.05'**	**W117° 24.80'**	~~16000~~	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	-1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	13000	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:15	Version 9
Card# 7	L15A		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

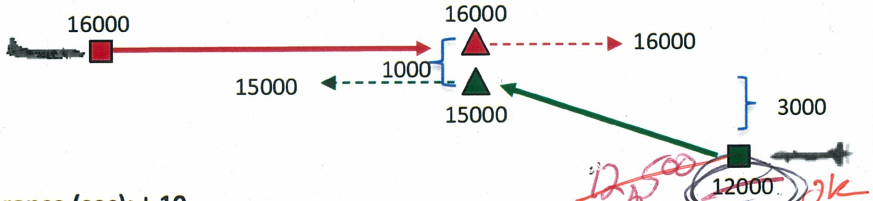
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



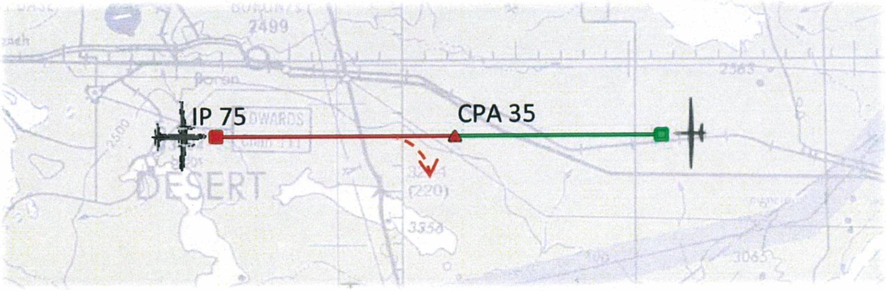
Tolerance (sec): ± 10

COMEX TIME: 0735

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
			IP TIME ADJUST:			
IP17	**N34° 57.09'**	**W117° 18.58'**	~~12000~~	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:15	Version 9
Card#	L15A		Intruder 1

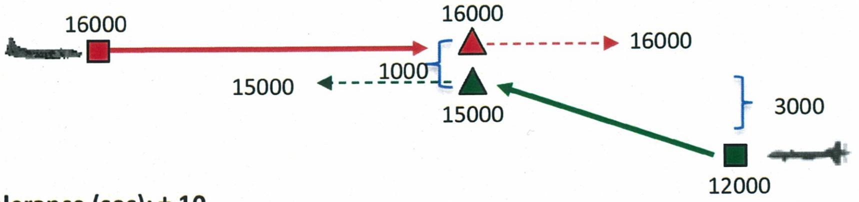


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**120**



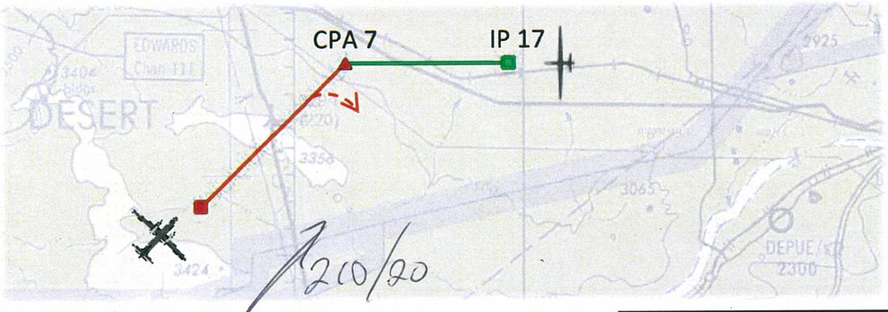
Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
			IP TIME ADJUST:			
IP75	**N34° 57.09'**	**W117° 36.77'**	16000	7.5	**150**	
	N34° 57' 05.4"	**W117° 36' 46.2"**	0	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:37	Version 9
Card# 8	**L15C**		Ownship



210/20

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

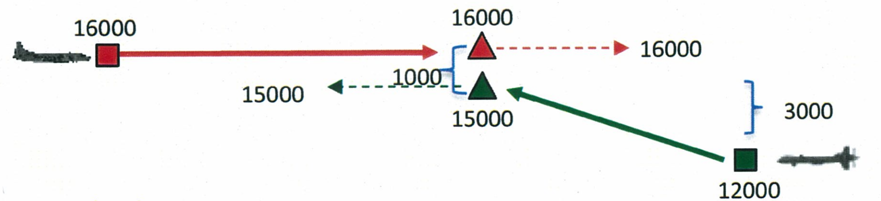
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☐ RADAR	☐ TCAS	☐ TRACKER



Tolerance (sec): ± 10

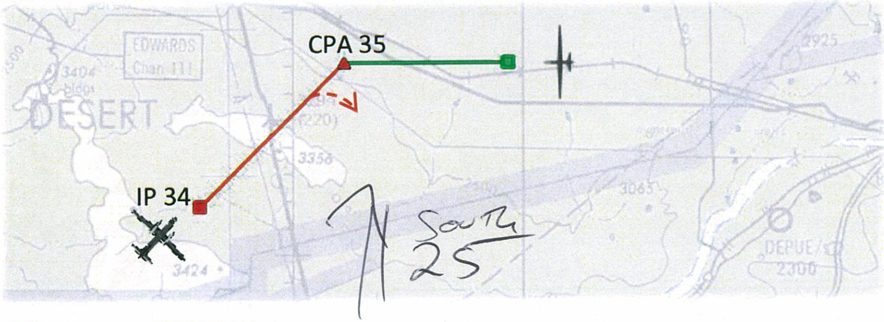
COMEX TIME: 0745

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP17	**N34° 57.09'**	**W117° 18.58'**	12000	7.5	**120**	
	N34° 57' 05.4"	**W117° 18' 34.7"**	1000	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	15000	0.0	**120**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:37	Version 9
Card#	**L15C**		Intruder 1



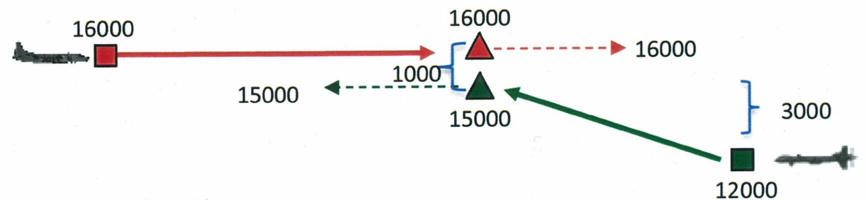
South
25

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**120**



Tolerance (sec): ± 10

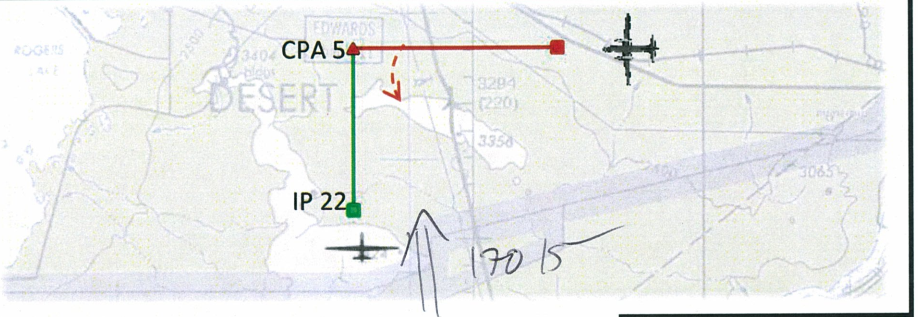
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP34	**N34° 51.79'**	**W117° 34.09'**	16000	7.5	**150**	
	N34° 51' 47.2"	**W117° 34' 05.4"**	0	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	16000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:57	Version 9
Card# 9	**L15D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

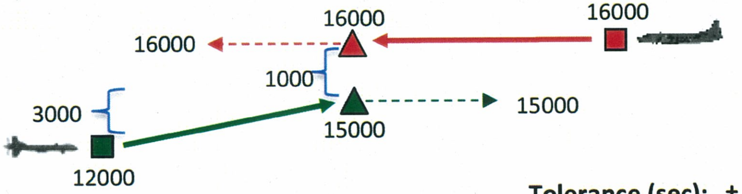
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER

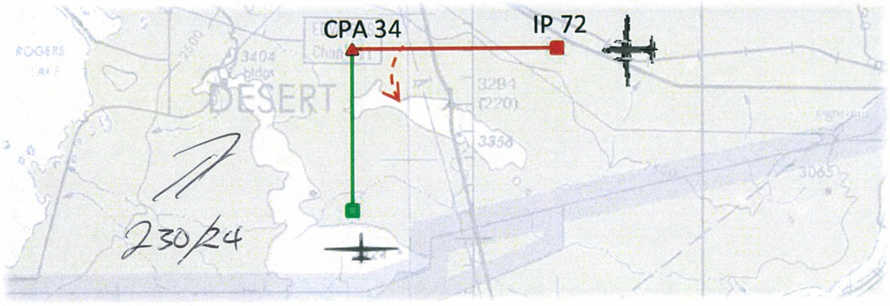


Tolerance (sec): ± 10

COMEX TIME: 0755			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP22	**N34° 49.71'**	**W117° 35.30'**	12000	7.5	**120**	
	N34° 49' 42.3"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	15000	0.0	**120**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:57	Version 9
Card#	**L15D**		Intruder 1

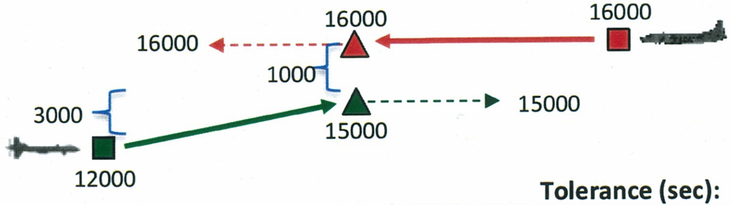


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
16000

ABORT PROCEDURE

16000	**150**

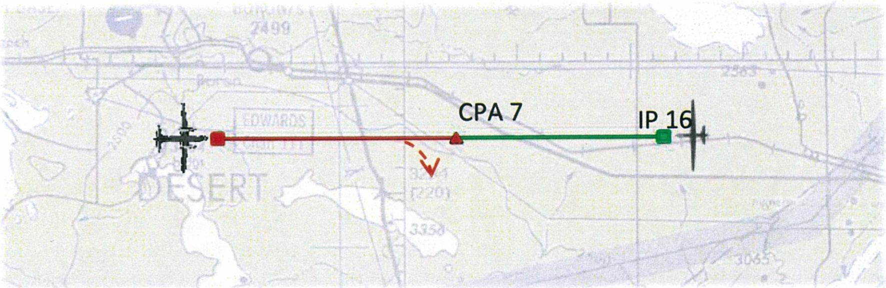


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP72	**N34° 57.05'**	**W117° 26.15'**	16000	7.5	**150**	
	N34° 57' 03.0"	**W117° 26' 09.0"**	0	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	16000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:11	Version 9
Card# 10	**L13A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

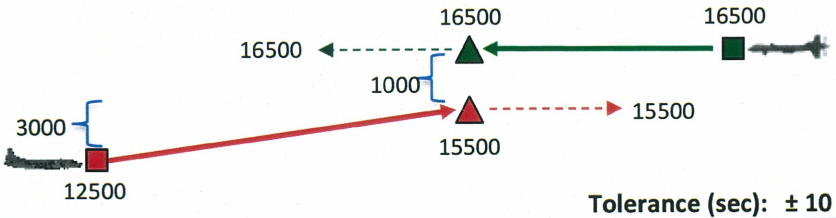
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
16500

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER

ABORT PROCEDURE

16500	**MAINTAIN HDG**



Tolerance (sec): ± 10

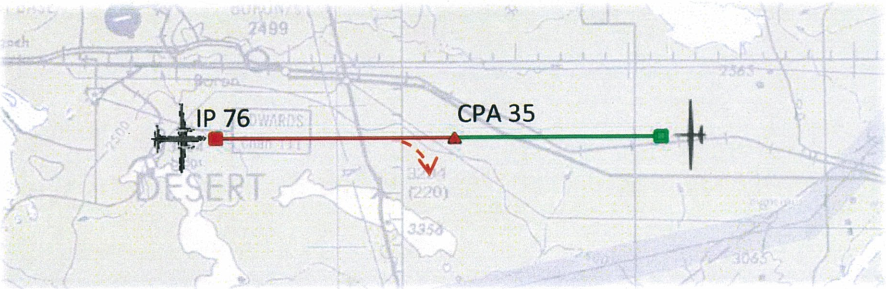
COMEX TIME: 0805

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:11	Version 9
Card#	**L13A**		Intruder 1

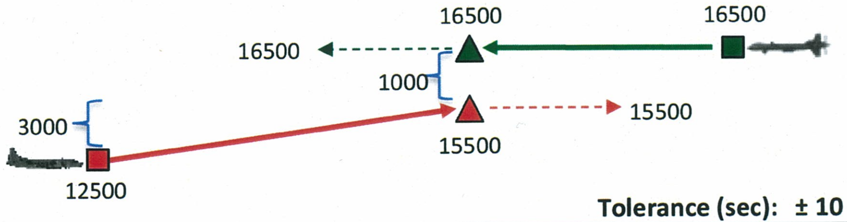


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**



Tolerance (sec): ± 10

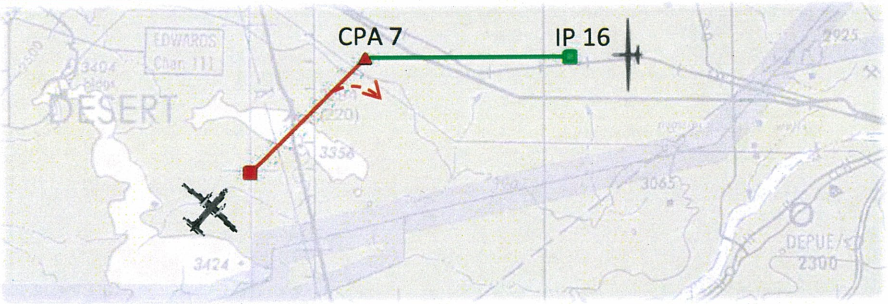
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP76	**N34° 57.09'**	**W117° 38.19'**	12500	8.5	**140**	
	N34° 57' 05.4"	**W117° 38' 11.2"**	1000	078		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	078		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:33	Version 9
Card# 11	**L13C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

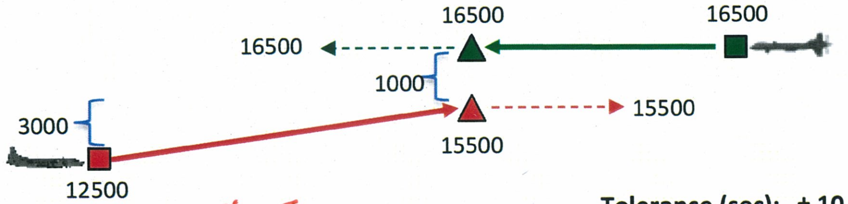
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☐ RADAR	☐ TCAS	☐ TRACKER

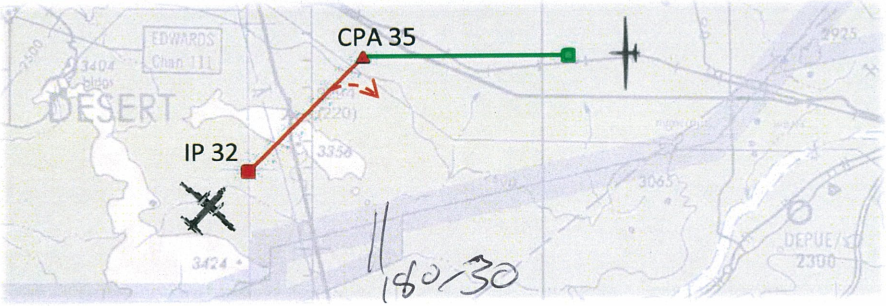


Tolerance (sec): ± 10

COMEX TIME: 0815 ~~[illegible]~~			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	16500	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	16500	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:33	Version 9
Card#	**L13C**		Intruder 1



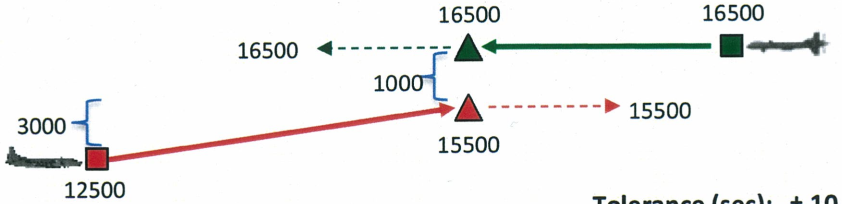
11
180/30

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**120**

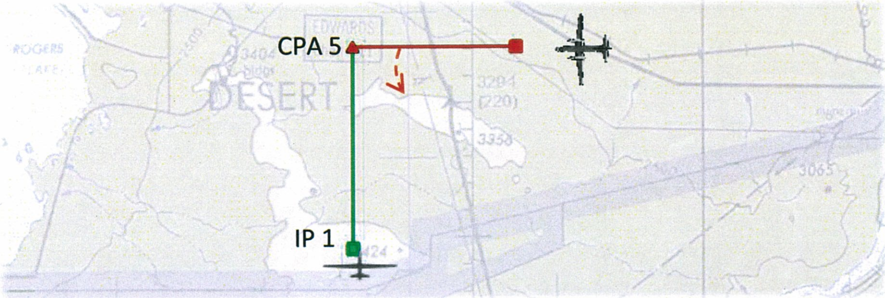


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	IAS	TIME HACK
			V/V	MC		
IP32	**N34° 50.97'**	**W117° 35.08'**	12500	8.5	**140**	
	N34° 50' 58.2"	**W117° 35' 04.7"**	1000	033		
CPA35	**N34° 57.09'**	**W117° 27.62'**	15500	0.0	**140**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	033		

NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:53	Version 9
Card# 12	**L13D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

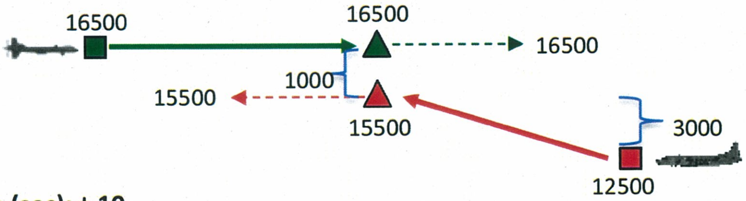
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
16500

ABORT PROCEDURE

16500	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER



Tolerance (sec): ± 10

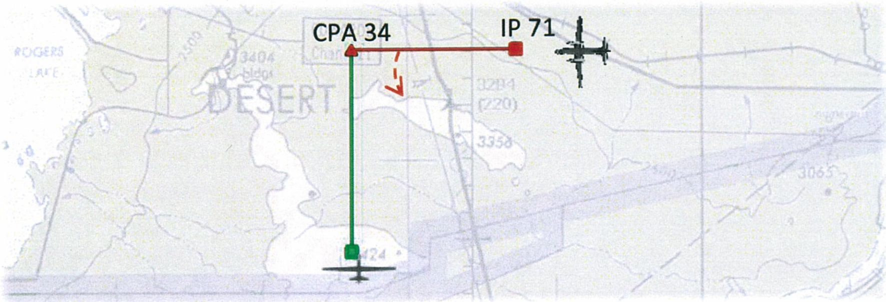
COMEX TIME: 0825

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	16500	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	16500	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver. Follow Autoresolver guidance

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:53	Version 9
Card#	**L13D**		Intruder 1

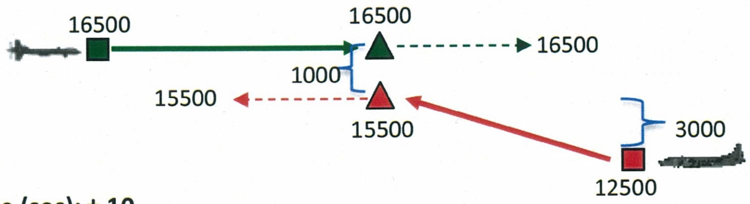


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15500

ABORT PROCEDURE

15500	**150**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	IAS	TIME HACK
IP71	**N34° 57.05'**	**W117° 24.80'**	12500	8.5	**140**	
	N34° 57' 03.0"	**W117° 24' 48.1"**	1000	258		
CPA34	**N34° 57.05'**	**W117° 35.30'**	15500	0.0	**140**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	258		

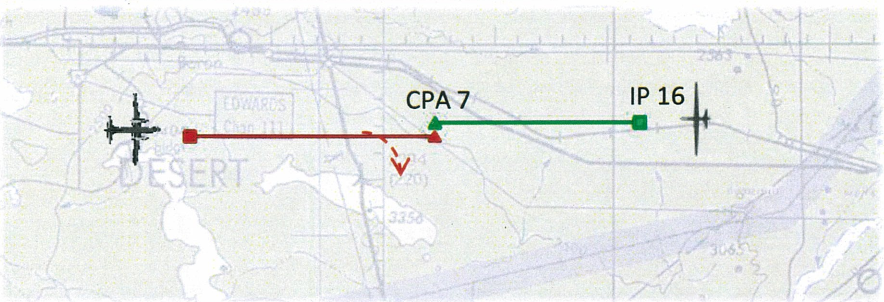
NOTE: Expect ownship maneuver

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:18	Version 9

Card# 16

L12A

Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

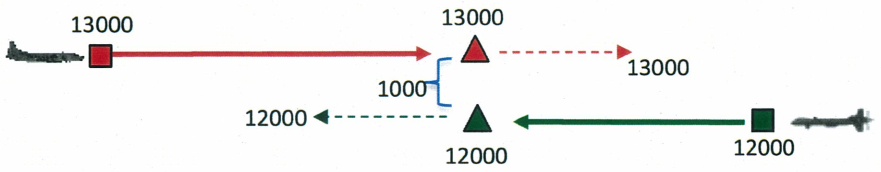
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



Tolerance (sec): ± 10

COMEX TIME: 0835			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

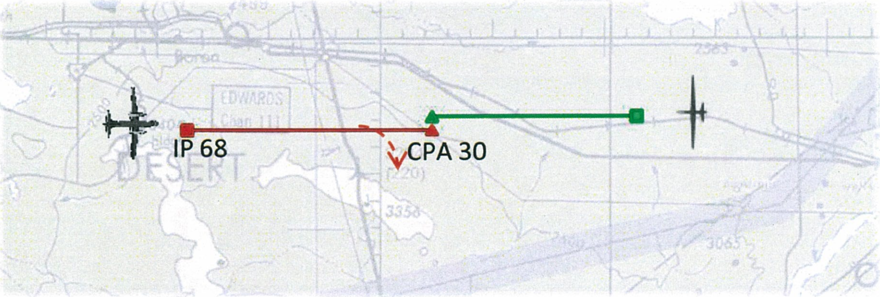
NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:18	Version 9

Card#

L12A

Intruder 1

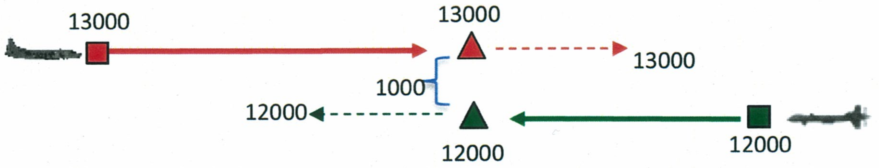


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

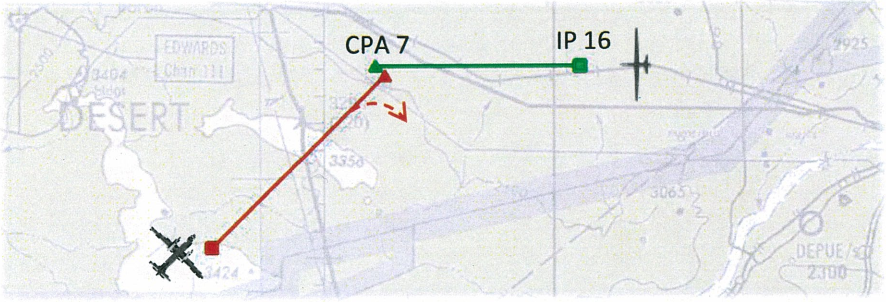


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	13000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	**Aircraft: NASA 870**	**S/N:29**	**Version 9**
Card# 17	**L12C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

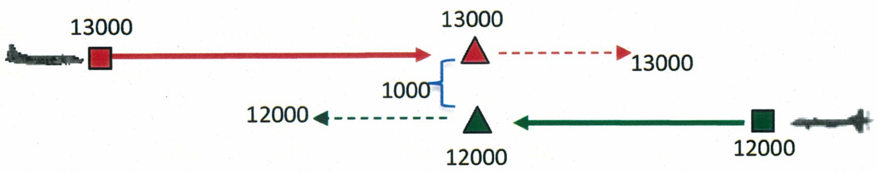
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☐ ADS-B		☑ RADAR	☐ TCAS	☑ TRACKER

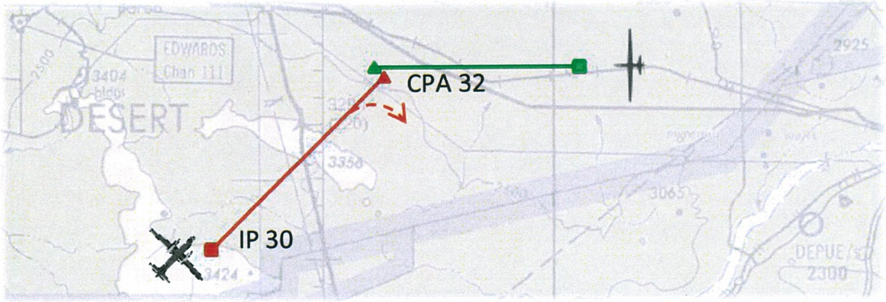


Tolerance (sec): ± 8

COMEX TIME: 0845			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	**Aircraft: NASA 865**	**S/N:29**	**Version 9**
Card#	**L12C**		Intruder 1

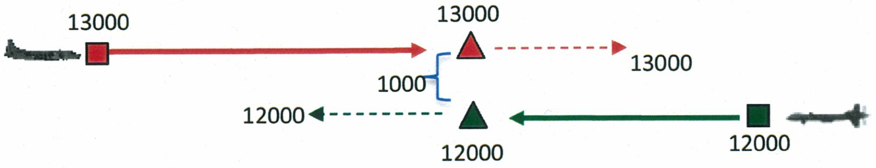


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

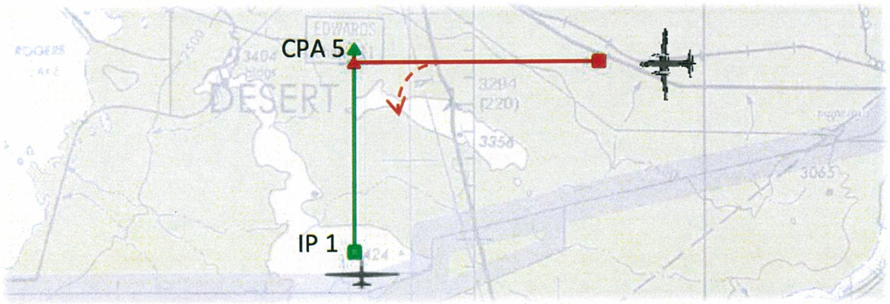


Tolerance (sec): ± 8

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	13000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	13000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:49	Version 9
Card# 18	**L12D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

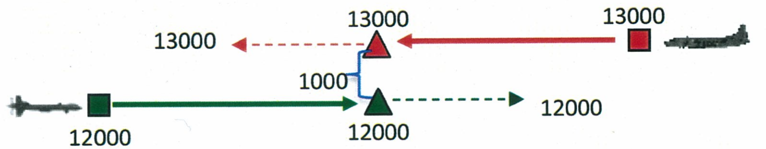
LOST LINK MISSION: LL WPT 10

DECONFLICTION ALT: 12000

☑ AR 1 ☐ AR 2 ☐ Stratway+ ☐ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER

ABORT PROCEDURE

12000	**MAINTAIN HDG**



Tolerance (sec): ± 5

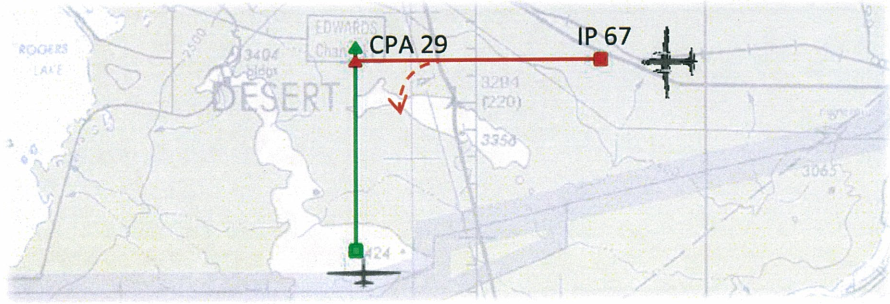
COMEX TIME: 0855

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:49	Version 9
Card#	**L12D**		Intruder 1

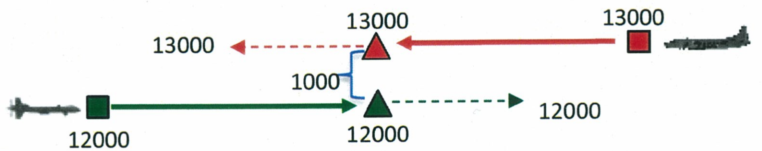


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 5

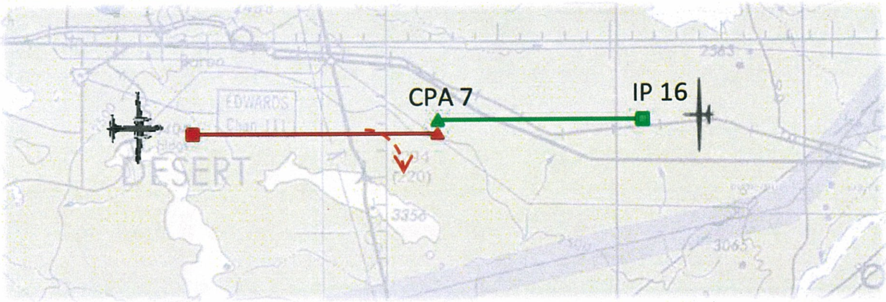
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP67	**N34° 56.56'**	**W117° 24.32'**	13000	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	13000	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:18	Version 9
Card# 19	**L12A**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

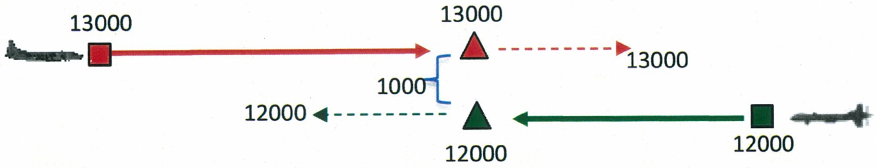
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

☑ AR 1	☐ AR 2	☐ Stratway+	☐ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER

ABORT PROCEDURE

$\overline{\textbf{12000}}$	**MAINTAIN HDG**

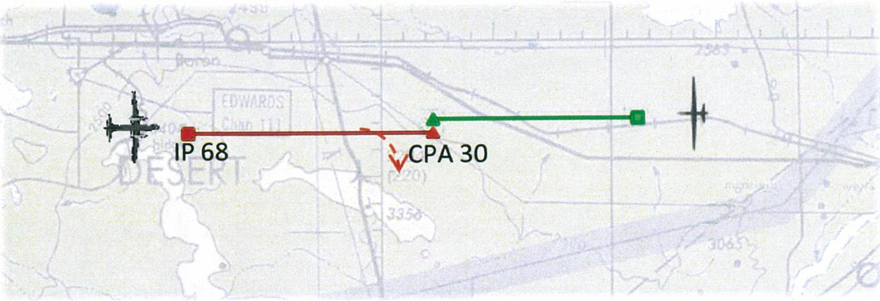


Tolerance (sec): ± 10

COMEX TIME: 0905			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:18	Version 9
Card#	**L12A**		Intruder 1

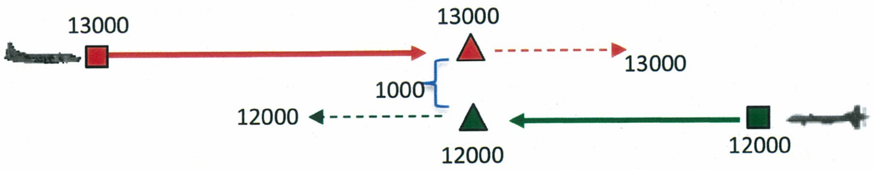


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

$\underline{\textbf{13000}}$	**120**

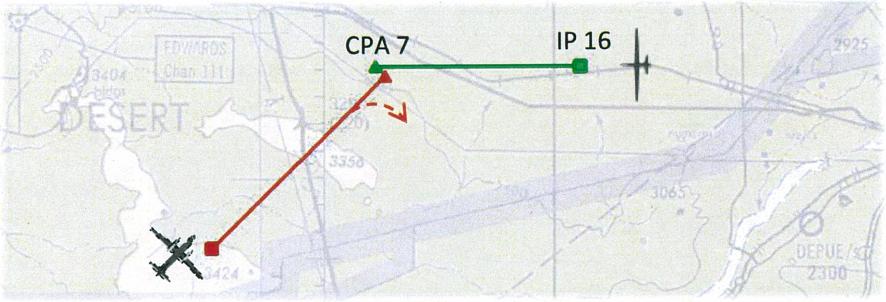


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP68	**N34° 56.60'**	**W117° 38.60'**	13000	9.0	**180**	
	N34° 56' 35.8"	**W117° 38' 36.0"**	0	078		
CPA30	**N34° 56.60'**	**W117° 27.62'**	13000	0.0	**180**	
	N34° 56' 35.8"	**W117° 27' 37.2"**	0	078		

NOTE: Cooperative/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 870	S/N:29	Version 9
Card# 20	**L12C**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

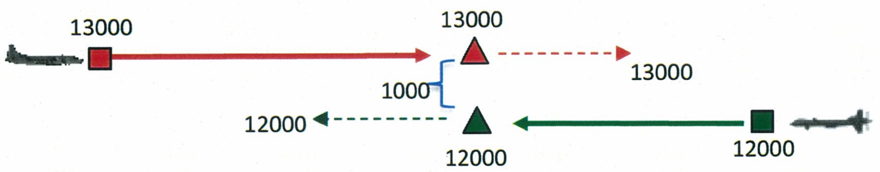
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☑ AR 1 ☐ AR 2	☐ Stratway+	☐ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☑ TRACKER



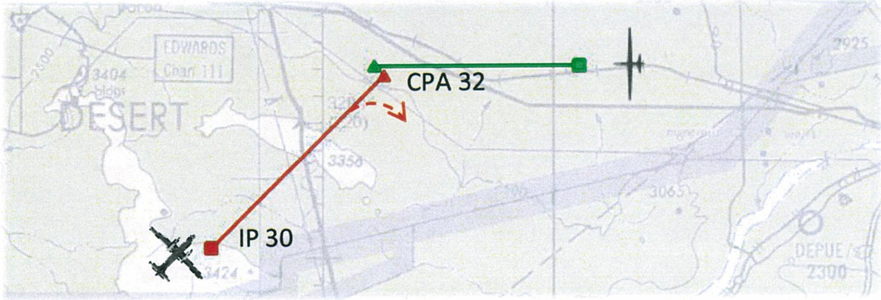
Tolerance (sec): ± 8

COMEX TIME: 0915 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana fly through/non-maneuvering

FT-3, Configuration 1a	Aircraft: NASA 865	S/N:29	Version 9
Card#	**L12C**		Intruder 1

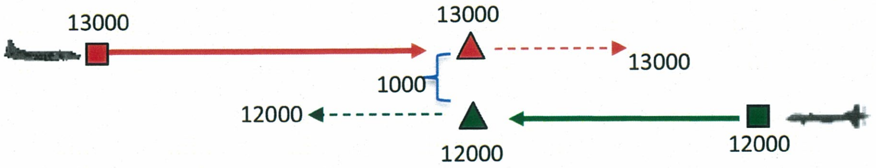


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**



Tolerance (sec): ± 8

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP30	**N34° 50.38'**	**W117° 34.96'**	13000	9.0	**180**	
	N34° 50' 22.6"	**W117° 34' 57.5"**	0	033		
CPA32	**N34° 56.74'**	**W117° 27.19'**	13000	0.0	**180**	
	N34° 56' 44.5"	**W117° 27' 11.6"**	0	033		

NOTE: Cooperative/non-maneuvering

12.11 Flight 11 Redlined Flight Cards

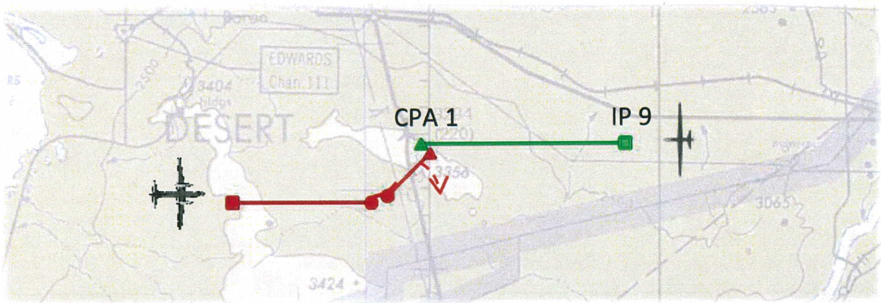
20150724

Order of Cards
Flight 11

Ver 2

Card #	Scenario	Priority	Configuraton	Ownship Manuever	Intruder	Notes
		2	Low Altitude Radar	None - Fly Through	865	LOS unlikely
		2		None - Fly Through	865	LOS unlikely
		2		None - Fly Through	865	LOS unlikely
		2		None - Fly Through	865	LOS unlikely
X	Altimeter Calibration				865	
5	159 - L57D	1	TCAS	Follow TCAS RA - Manually	865	
6	130 - L32D	1		Follow TCAS RA - Manually	865	
7	131 - L32F	1		Follow TCAS RA - Manually	865	
8	152 - L32B	1		Follow TCAS RA - Manually	865	
9	153 - L32G	1		Follow TCAS RA - Manually	865	
10	154 - L32H	1		Follow TCAS RA - Manually	865	
11	155 - L31B	1		Follow TCAS RA - Manually	865	
12	156 - L31G	1		Follow TCAS RA - Manually	865	
13	157 - L31H	1		Follow TCAS RA - Manually	865	
14	168 - L52M	1	CPDS	Maneuver based on CPDS	865	
15	164 - L42M	1		Maneuver based on CPDS	865	
16	127 L12P	2	Radar	None - Fly Through	865	Zig Zag
17	116 - L31G	2		None - Fly Through	865	Bearing 110
		2		None - Fly Through	865	Bearing 110
		2	TCAS	Follow TCAS RA - Manually	865	
		2		Follow TCAS RA - Manually	865	
		2		Follow TCAS RA - Manually	865	
22	135 - L31F	2		Follow TCAS RA - Manually	865	
23	120 - L56G	3	Radar	None - Fly Through	865	Bearing 110
		3		None - Fly Through	865	Bearing 90
25	126 -L56G	3		None - Fly Through	865	Bearing 90
		3		None - Fly Through	865	Bearing 110

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 168	Version 9
Card# 14	**L52M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

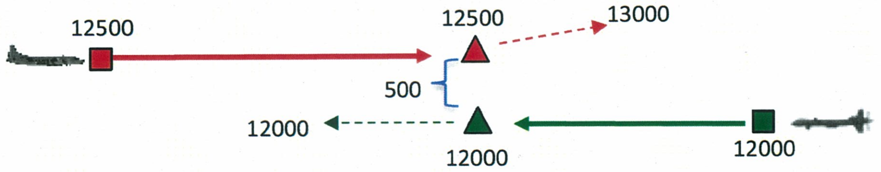
LOST LINK MISSION:
LL WPT 8

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☐ RADAR	☐ TCAS	☐ TRACKER

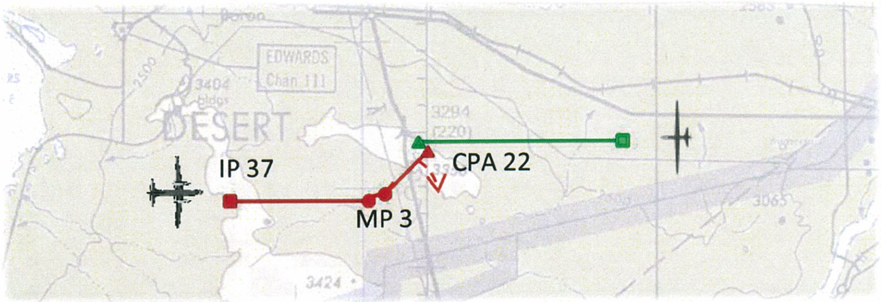


Tolerance (sec): ± 10

COMEX TIME: 0633			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥ 500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 168	Version 9
Card#	**L52M**		Intruder 1



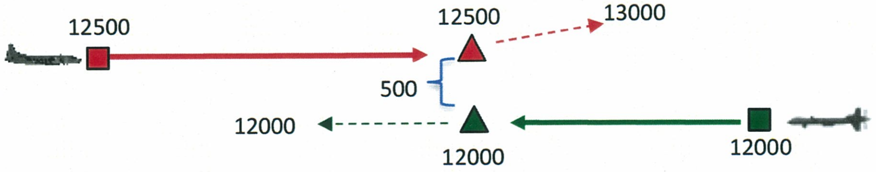
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

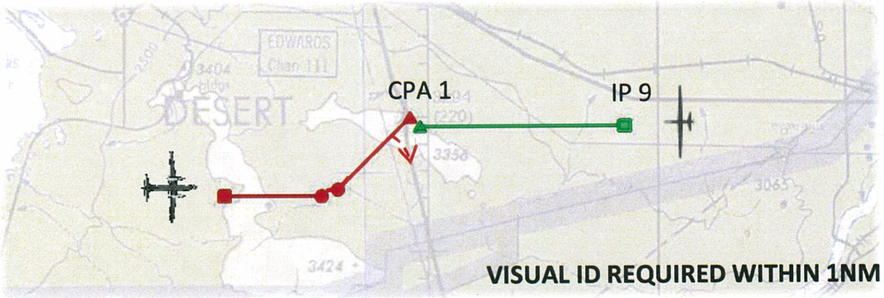
Note: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥ 500 ft vertical separation.



Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP37	**N34° 52.46'**	**W117° 38.74'**	12500	5.2	**160**	
	N34° 52' 27.7"	**W117° 38' 44.5"**	0	078		
MP3	**N34° 52.46'**	**W117° 32.51'**	12500	2.9	**160**	
	N34° 52' 27.7"	**W117° 32' 30.7"**	0	033		
CPA22	**N34° 54.28'**	**W117° 29.87'**	12500	0.0	**160**	
	N34° 54' 16.9"	**W117° 29' 51.9"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 164	Version 9
Card# 15	**L42M**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

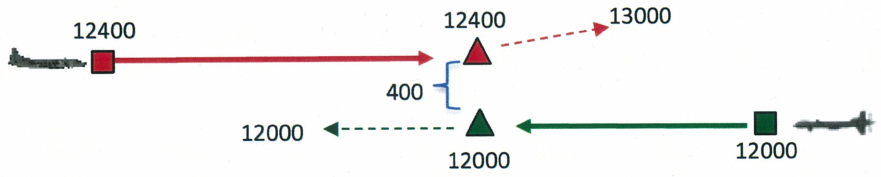
LOST LINK MISSION:
LL WPT 8

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☐ RADAR ☐ TCAS ☐ TRACKER



Tolerance (sec): ± 10

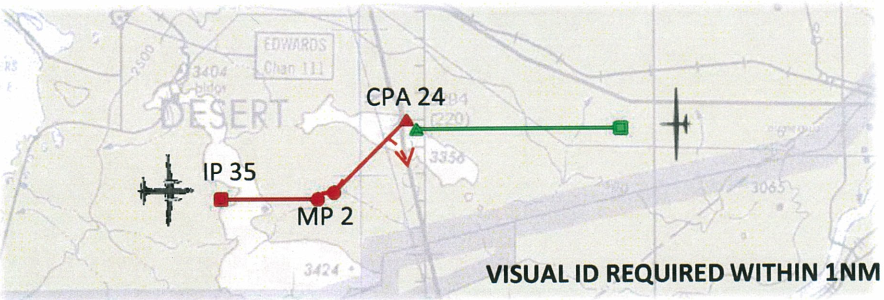
COMEX TIME: 0643

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP9	**N34° 54.63'**	**W117° 21.15'**	12000	7.5	**150**	
	N34° 54' 37.8"	**W117° 21' 08.7"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥ 500 ft vertical separation.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 164	Version 9
Card#	**L42M**		Intruder 1



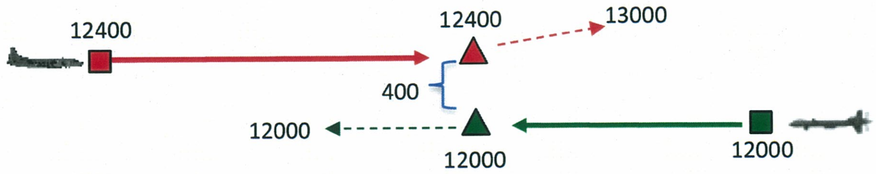
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

Note: Ikhana maneuver. Use CPDS display. Maintain 0.5 NM or ≥ 500 ft vertical separation.



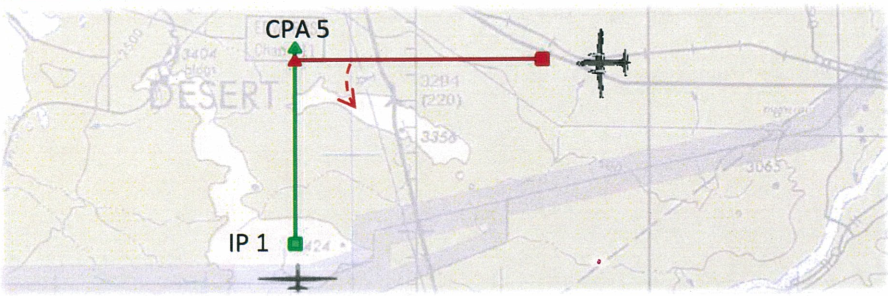
Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP35	**N34° 52.06'**	**W117° 39.04'**	12400	3.8	**160**	
	N34° 52' 03.6"	**W117° 39' 02.3"**	0	078		
MP2	**N34° 52.06'**	**W117° 34.71'**	12400	4.4	**160**	
	N34° 52' 03.6"	**W117° 34' 42.3"**	0	033		
CPA24	**N34° 54.98'**	**W117° 30.72'**	12400	0.0	**160**	
	N34° 54' 58.7"	**W117° 30' 42.9"**	0	033		

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 159	Version 9
Card# 5	**L57D**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

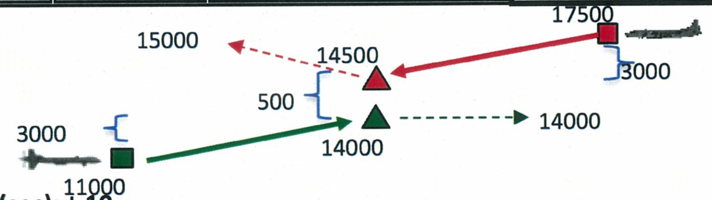
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
14000

ABORT PROCEDURE

14000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER



Tolerance (sec): ± 10

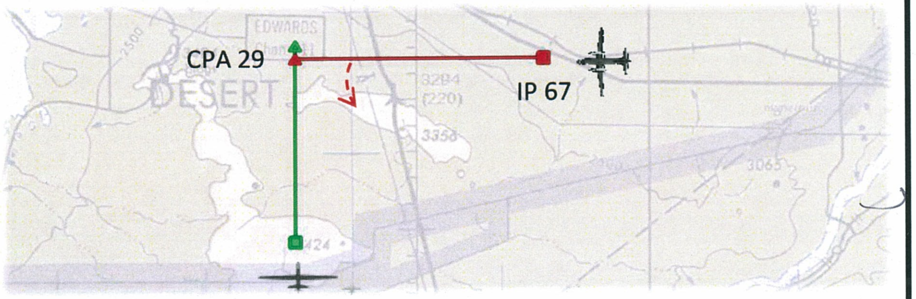
COMEX TIME: 0652

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	11000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	1000	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	14000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 159	Version 9
Card#	**L57D**		Intruder 1

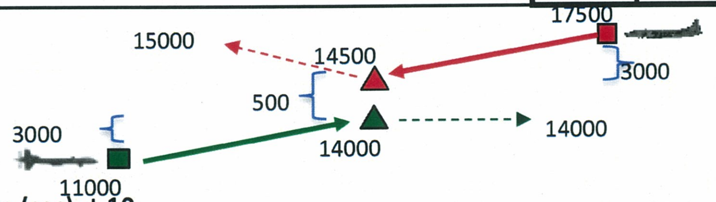


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
15000

ABORT PROCEDURE

15000	**150**



Tolerance (sec): ± 10

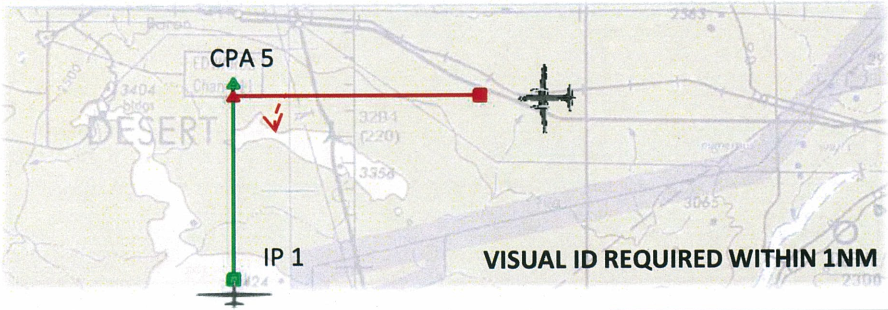
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	17500	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	-1000	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	14500	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 130	Version 9
Card# 6	**L32D**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

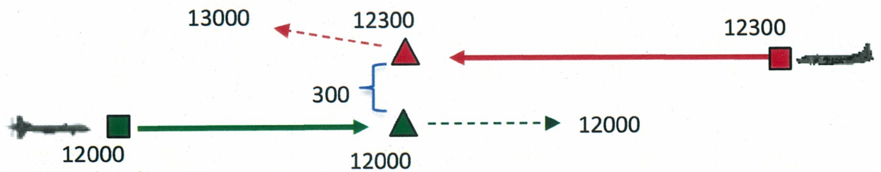
LOST LINK MISSION:
LL WPT 10

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER



Tolerance (sec): ± 10

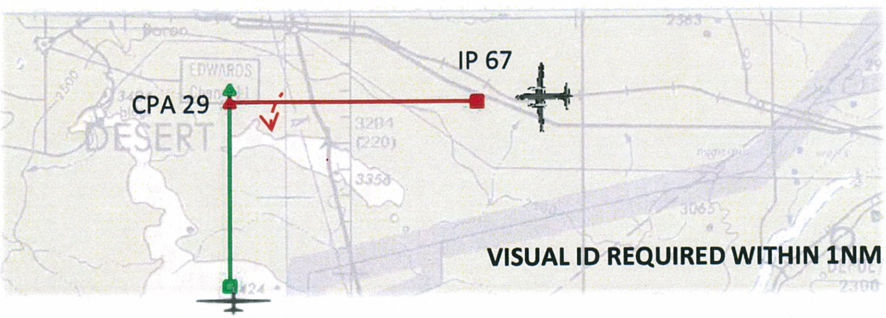
COMEX TIME: 0702

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP1	**N34° 49.55'**	**W117° 35.30'**	12000	7.5	**150**	
	N34° 49' 33.0"	**W117° 35' 18.0"**	0	348		
CPA5	**N34° 57.05'**	**W117° 35.30'**	12000	0.0	**150**	
	N34° 57' 03.0"	**W117° 35' 18.0"**	0	348		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 130	Version 9
Card#	**L32D**		Intruder 1



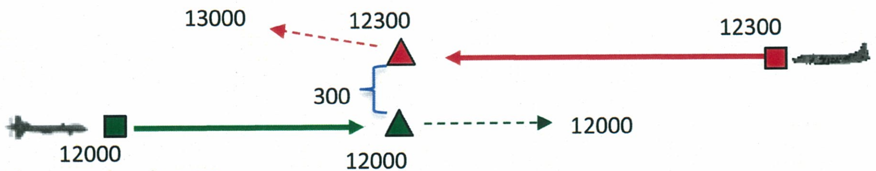
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**150**



Tolerance (sec): ± 10

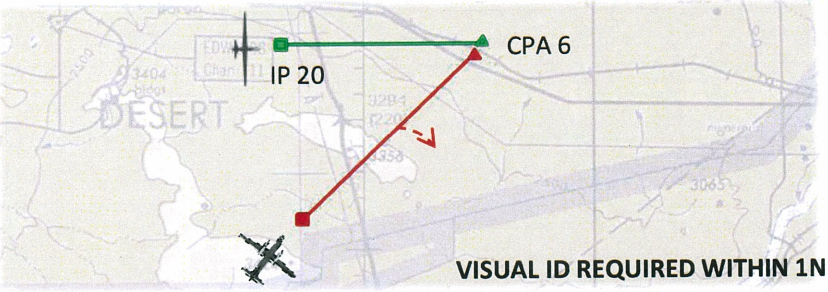
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP67	**N34° 56.56'**	**W117° 24.32'**	12300	9.0	**180**	
	N34° 56' 33.4"	**W117° 24' 19.2"**	0	258		
CPA29	**N34° 56.56'**	**W117° 35.30'**	12300	0.0	**180**	
	N34° 56' 33.4"	**W117° 35' 18.0"**	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 131	Version 9
Card# 7	**L32F**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

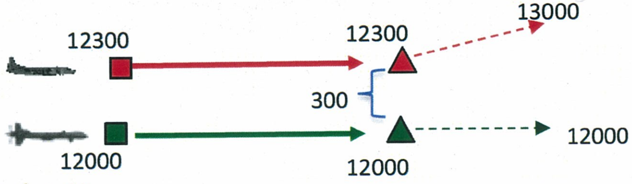
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☐ TRACKER

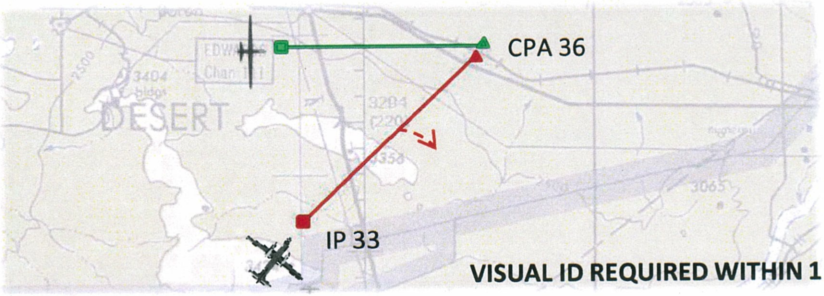


Tolerance (sec): ± 10

COMEX TIME:	0710		IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP20	**N34° 57.89'**	**W117° 33.62'**	12000	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12000	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 131	Version 9
Card#	**L32F**		Intruder 1



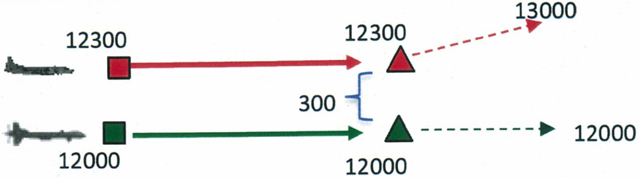
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**130**

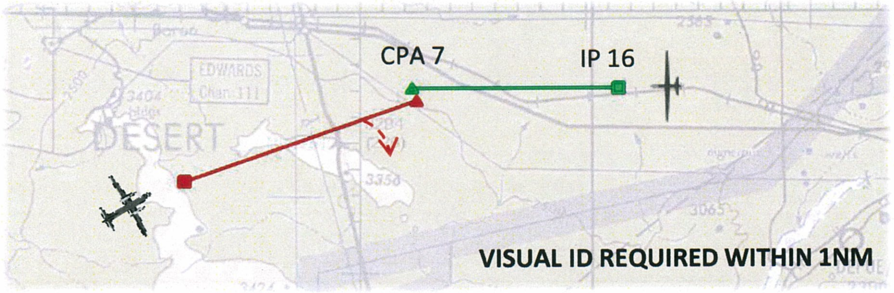


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP33	**N34° 51.18'**	**W117° 32.66'**	12300	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12300	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 152	Version 9
Card# 8	**L32B**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

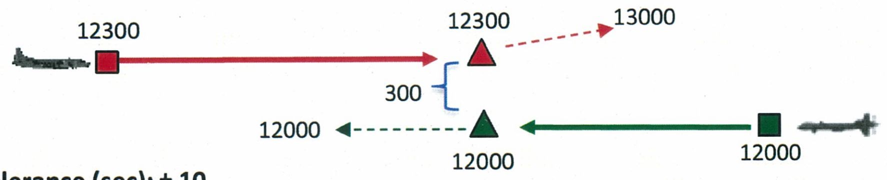
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER

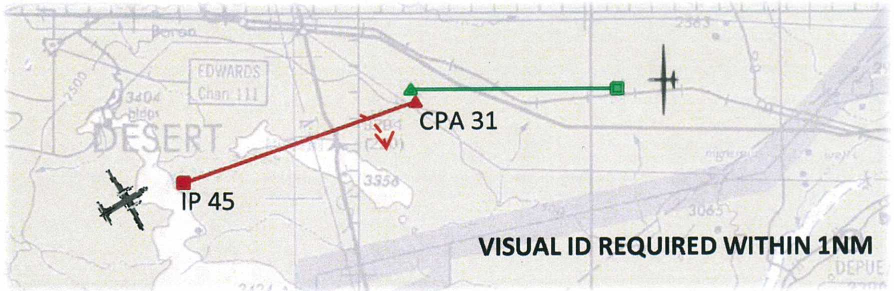


Tolerance (sec): ± 10

COMEX TIME: 0720			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 152	Version 9
Card#	**L32B**		Intruder 1



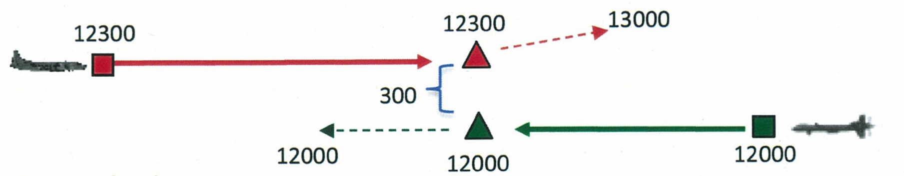
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**120**

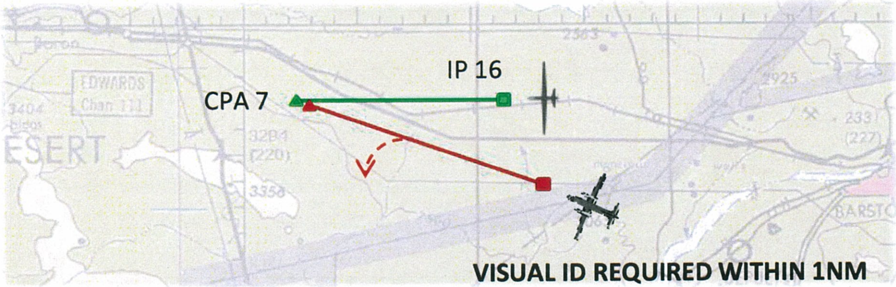


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP45	**N34° 53.55'**	**W117° 37.73'**	12300	9.0	**180**	
	N34° 53' 32.9"	**W117° 37' 43.9"**	0	058		
CPA31	**N34° 56.63'**	**W117° 27.41'**	12300	0.0	**180**	
	N34° 56' 37.6"	**W117° 27' 24.8"**	0	058		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 153	Version 9
Card#9	**L32G**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

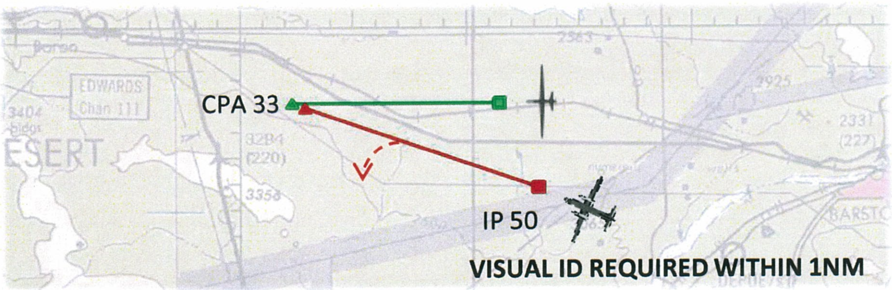
☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
☐ TRACKER			

Tolerance (sec): ± 10

COMEX TIME:	0730		IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12000	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12000	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 153	Version 9
Card#	**L32G**		Intruder 1

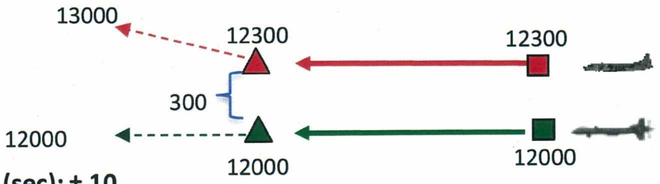


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**200**

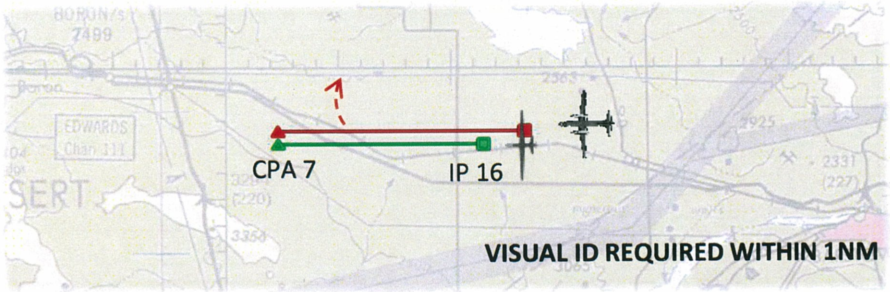


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP50	**N34° 53.84'**	**W117° 16.74'**	12300	9.0	**180**	
	N34° 53' 50.6"	**W117° 16' 44.2"**	0	278		
CPA33	**N34° 56.92'**	**W117° 27.05'**	12300	0.0	**180**	
	N34° 56' 55.3"	**W117° 27' 03.2"**	0	278		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 154	Version 9
Card# 6	L32H		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	MAINTAIN HDG

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☑ ADS-B ☑ RADAR ☑ TCAS ☐ TRACKER

Tolerance (sec): ± 10

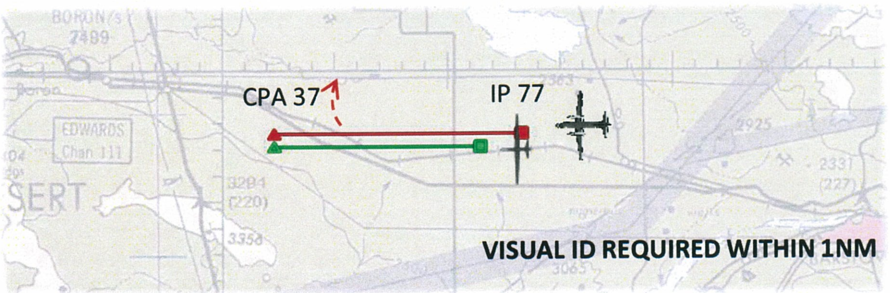
COMEX TIME: 0738

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	N34° 57.09'	W117° 18.47'	12000	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12000	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 154	Version 9
Card#	L32H		Intruder 1



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	300

Tolerance (sec): ± 10

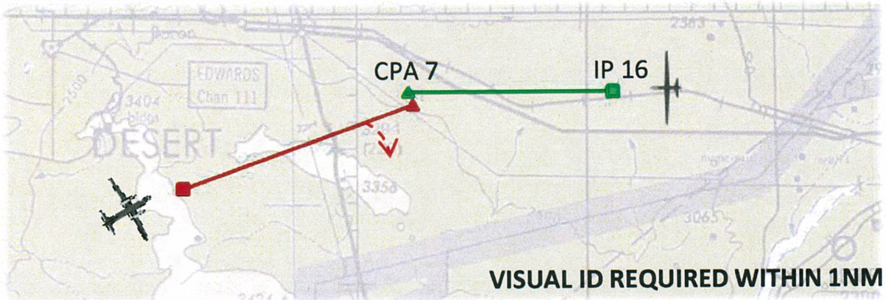
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP77	N34° 57.58'	W117° 16.64'	12300	9.0	180	
	N34° 57' 35.0"	W117° 16' 38.3"	0	258		
CPA37	N34° 57.58'	W117° 27.62'	12300	0.0	180	
	N34° 57' 35.0"	W117° 27' 37.2"	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 155	Version 9
Card# 11	**L31B**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

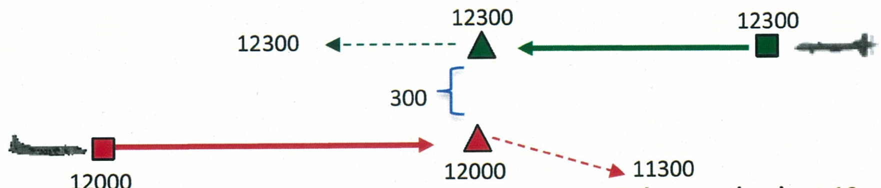
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☑ ADS-B	☑ RADAR	☑ TCAS	☐ TRACKER

ABORT PROCEDURE

12300	**MAINTAIN HDG**



Tolerance (sec): ± 10

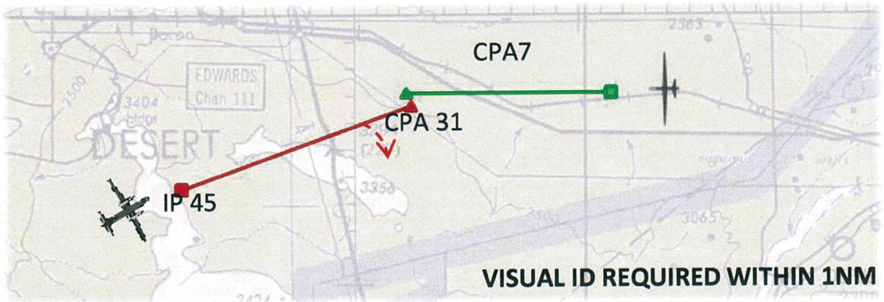
COMEX TIME: 0747

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	**N34° 57.09'**	**W117° 18.47'**	12300	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12300	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 155	Version 9
Card#	**L31B**		Intruder 1

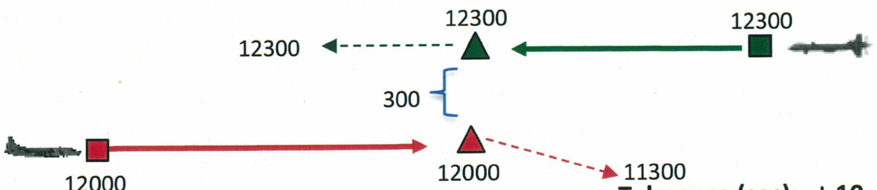


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11300	**120**



Tolerance (sec): ± 10

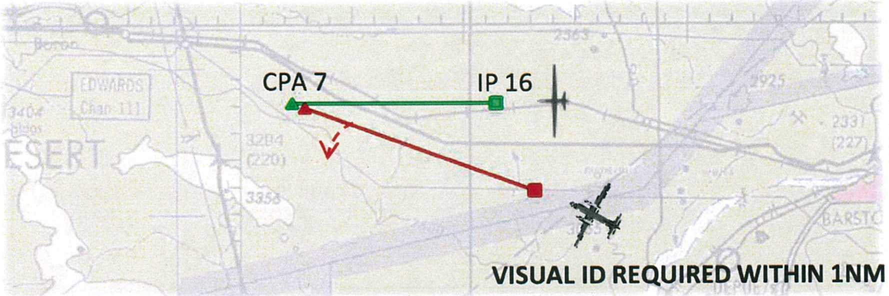
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP45	**N34° 53.55'**	**W117° 37.73'**	12000	9.0	**180**	
	N34° 53' 32.9"	**W117° 37' 43.9"**	0	058		
CPA31	**N34° 56.63'**	**W117° 27.41'**	12000	0.0	**180**	
	N34° 56' 37.6"	**W117° 27' 24.8"**	0	058		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 156	Version 9
Card# 12	L31G		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

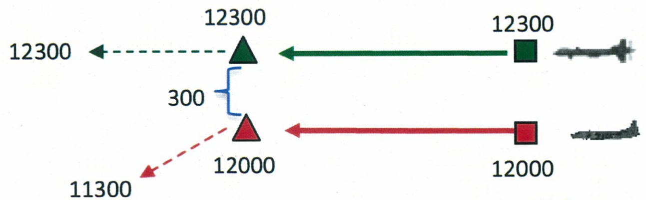
LOST LINK MISSION:
LL WPT 9

DECONFLICTION ALT:
13000

ABORT PROCEDURE

12300	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS	☐ TRACKER

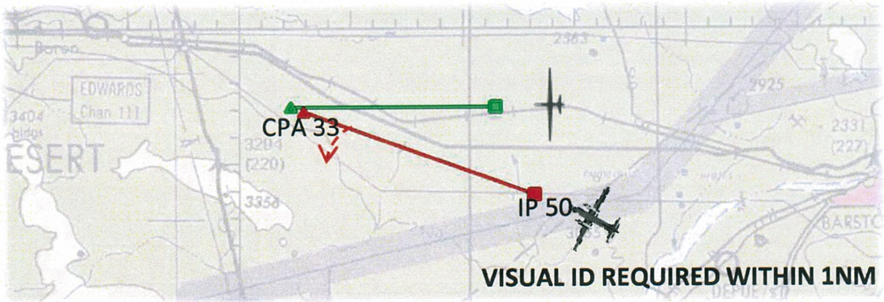


Tolerance (sec): ± 10

COMEX TIME: 0756			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP16	**N34° 57.09'**	**W117° 18.47'**	12300	7.5	**150**	
	N34° 57' 05.4"	**W117° 18' 28.2"**	0	258		
CPA7	**N34° 57.09'**	**W117° 27.62'**	12300	0.0	**150**	
	N34° 57' 05.4"	**W117° 27' 37.2"**	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 156	Version 9
Card#	L31G		Intruder 1



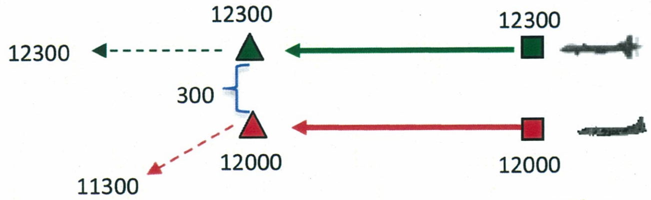
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11300	**240**

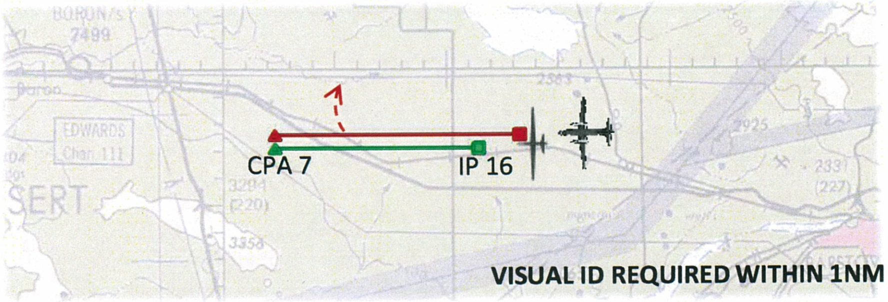


Tolerance (sec): ± 10

COMEX TIME:			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP50	**N34° 53.84'**	**W117° 16.74'**	12000	9.0	**180**	
	N34° 53' 50.6"	**W117° 16' 44.2"**	0	278		
CPA33	**N34° 56.92'**	**W117° 27.05'**	12000	0.0	**180**	
	N34° 56' 55.3"	**W117° 27' 03.2"**	0	278		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 157	Version 9
Card# 13	L31H		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

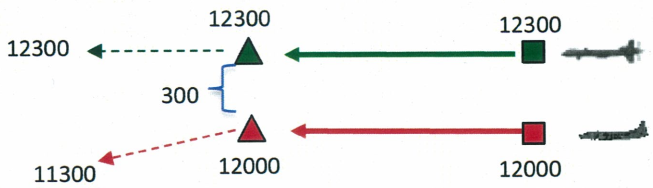
LOST LINK MISSION: LL WPT 9

DECONFLICTION ALT: 13000

ABORT PROCEDURE

12300	MAINTAIN HDG

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☑ ADS-B		☑ RADAR	☑ TCAS
			☐ TRACKER



Tolerance (sec): ± 10

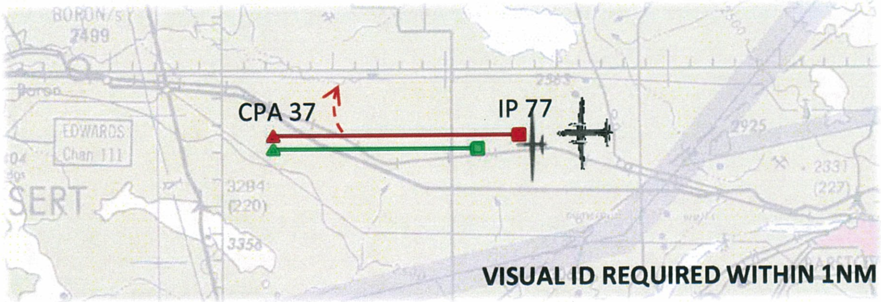
COMEX TIME: 0805

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP16	N34° 57.09'	W117° 18.47'	12300	7.5	150	
	N34° 57' 05.4"	W117° 18' 28.2"	0	258		
CPA7	N34° 57.09'	W117° 27.62'	12300	0.0	150	
	N34° 57' 05.4"	W117° 27' 37.2"	0	258		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 157	Version 9
Card#	L31H		Intruder 1



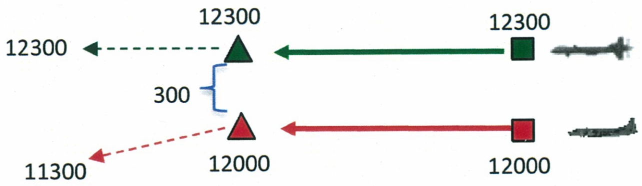
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT: 12000

ABORT PROCEDURE

11300	300



Tolerance (sec): ± 10

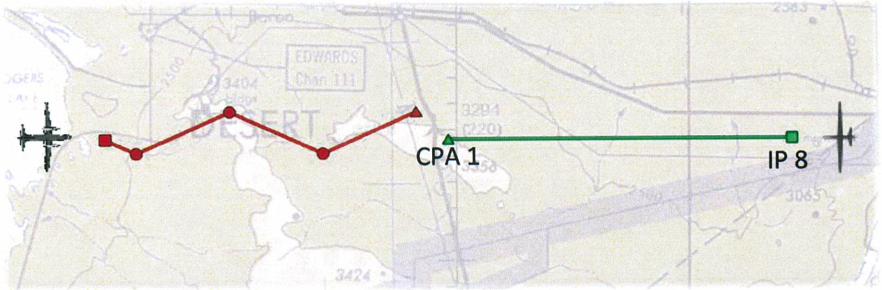
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT	DIST	G/S	TIME HACK
			V/V	MC		
IP77	N34° 57.58'	W117° 16.64'	12000	9.0	180	
	N34° 57' 35.0"	W117° 16' 38.3"	0	258		
CPA37	N34° 57.58'	W117° 27.62'	12000	0.0	180	
	N34° 57' 35.0"	W117° 27' 37.2"	0	258		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 127	Version 9
Card# 16	**L12P**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

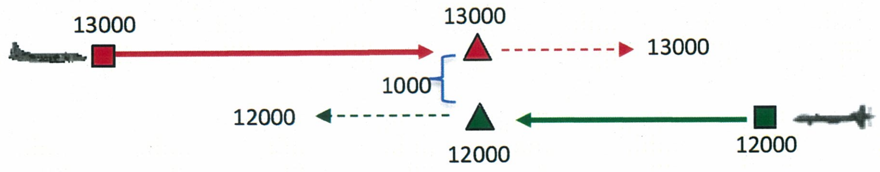
LOST LINK MISSION:
LL WPT 8

DECONFLICTION ALT:
12000

ABORT PROCEDURE

12000	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS
☐ OFF		☑ Advisory	☐ AUTO
☐ ADS-B		☑ RADAR	☐ TCAS
		☑ TRACKER	



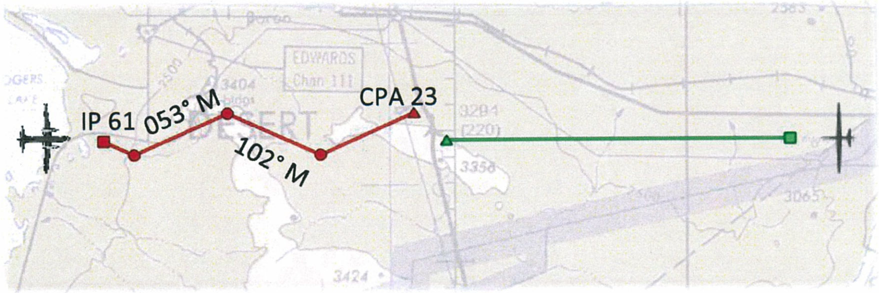
Tolerance (sec): ± 10

COMEX TIME: 0815

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	TIME HACK
IP8	**N34° 54.63'**	**W117° 15.05'**	12000	12.5	**150**	
	N34° 54' 37.8"	**W117° 15' 02.8"**	0	258		
CPA1	**N34° 54.63'**	**W117° 30.29'**	12000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	258		

NOTE: Ikhana fly-through/non-maneuvering. 5 min

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 127	Version 9
Card#	**L12P**		Intruder 1



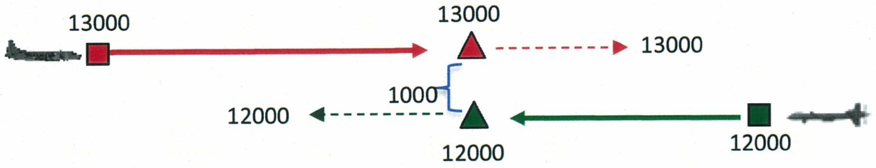
1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
13000

ABORT PROCEDURE

13000	**MAINTAIN HDG**

NE course 053 M
SE course 102 M
Timing: Short leg 30 sec, all other 1.5 min



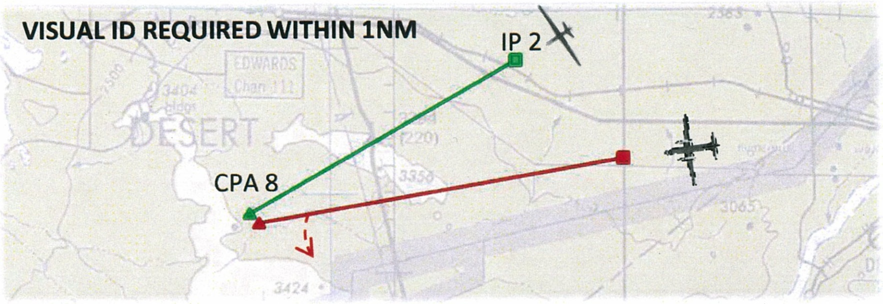
Tolerance (sec): ± 10

COMEX TIME:

PT	LATITUDE	LONGITUDE	IP TIME ADJUST: ALT V/V	DIST MC	G/S	TIME HACK
IP61	**N34° 54.63'**	**W117° 45.53'**	13000	12.5	**150**	
	N34° 54' 37.8"	**W117° 45' 32.0"**	0	078		
CPA23	**N34° 54.63'**	**W117° 30.29'**	13000	0.0	**150**	
	N34° 54' 37.8"	**W117° 30' 17.4"**	0	078		

NOTE: 5 min course (fly course and time), continue zig-zag until terminate

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 116	Version 9
Card# 17	**L31G (110)**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

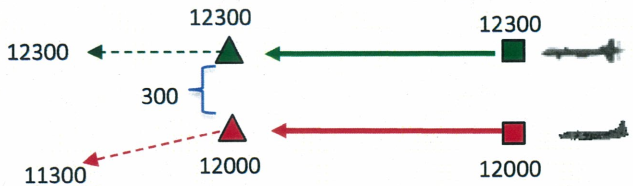
LOST LINK MISSION:
LL WPT 13

DECONFLICTION ALT:
13000

ABORT PROCEDURE

12300	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



Tolerance (sec): ± 10

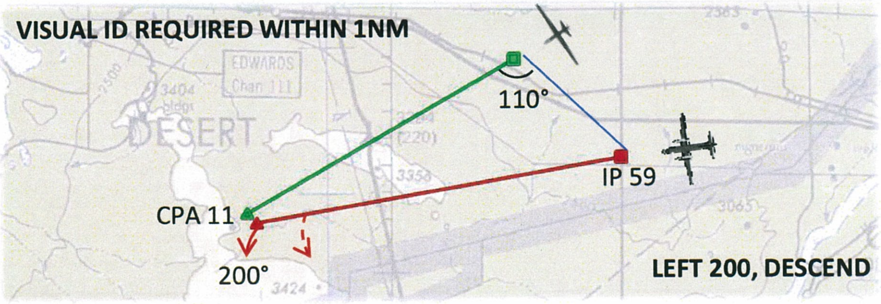
COMEX TIME: 0824

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	**N34° 57.89'**	**W117° 24.47'**	12300	12.5	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	228		
CPA8	**N34° 52.24'**	**W117° 36.42'**	12300	0.0	**150**	
	N34° 52' 14.1"	**W117° 36' 25.3"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 116	Version 9
Card#	**L31G (110)**		Intruder 1

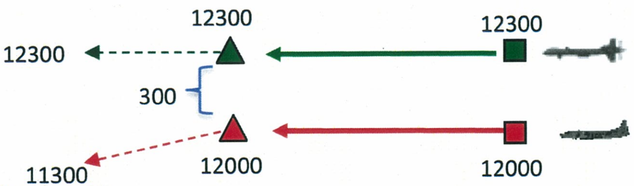


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11300	**180**



Tolerance (sec): ± 10

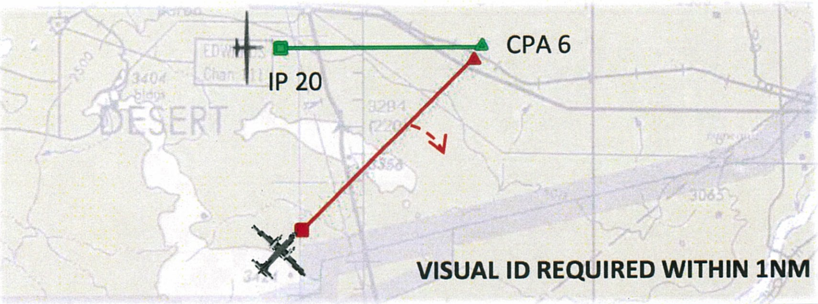
COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP59	**N34° 54.25'**	**W117° 19.68'**	12000	15.0	**180**	
	N34° 54' 14.7"	**W117° 19' 40.6"**	0	248		
CPA11	**N34° 51.89'**	**W117° 35.97'**	12000	0.0	**180**	
	N34° 51' 53.3"	**W117° 35' 58.4"**	0	248		

NOTE: 5 min legs, 110° BEARING, Turn Left heading 200 at CPA to maintain 0.5nm separation. Descend.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 135	Version 9
Card# 22	**L31F**		Ownship



VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

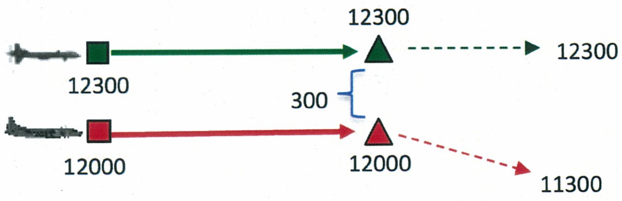
LOST LINK MISSION:
LL WPT 1

DECONFLICTION ALT:
13000

ABORT PROCEDURE

12300	**MAINTAIN HDG**

☐ AR 1	☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF		☑ Advisory	☐ AUTO	
☑ ADS-B		☑ RADAR	☑ TCAS	☐ TRACKER



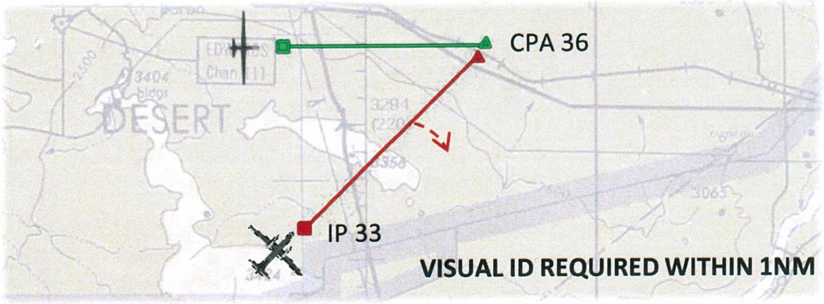
Tolerance (sec): ± 10

COMEX TIME: 0832 | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP20	**N34° 57.89'**	**W117° 33.62'**	12300	7.5	**150**	
	N34° 57' 53.4"	**W117° 33' 37.3"**	0	078		
CPA6	**N34° 57.89'**	**W117° 24.47'**	12300	0.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	0	078		

NOTE: Ikhana maneuver, follow TCAS RA if in advisory mode. Or if in AUTO, monitor automatic maneuver.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 135	Version 9
Card#	**L31F**		Intruder 1



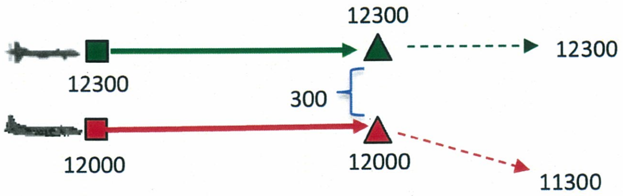
VISUAL ID REQUIRED WITHIN 1NM

1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 2.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11300	**120**



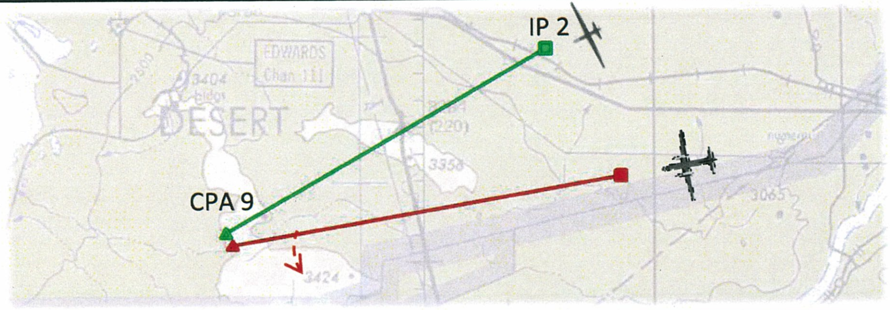
Tolerance (sec): ± 10

COMEX TIME: | IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP33	**N34° 51.18'**	**W117° 32.66'**	12000	9.0	**180**	
	N34° 51' 10.6"	**W117° 32' 39.7"**	0	033		
CPA36	**N34° 57.54'**	**W117° 24.90'**	12000	0.0	**180**	
	N34° 57' 32.5"	**W117° 24' 53.8"**	0	033		

NOTE: Expect Ikhana maneuver.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 126	Version 9
Card# 25	**L56G (90)**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

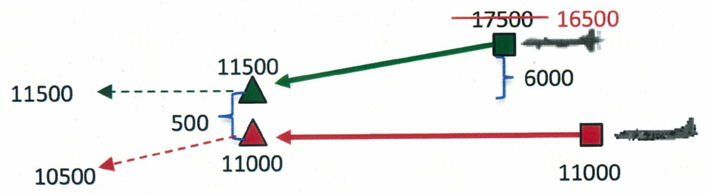
LOST LINK MISSION:
LL WPT 13

DECONFLICTION ALT:
12000

☐ AR 1 ☐ AR 2	☐ Stratway+	☑ CPDS	
☐ OFF	☑ Advisory	☐ AUTO	
☐ ADS-B	☑ RADAR	☐ TCAS	☑ TRACKER

ABORT PROCEDURE

11500	**MAINTAIN HDG**



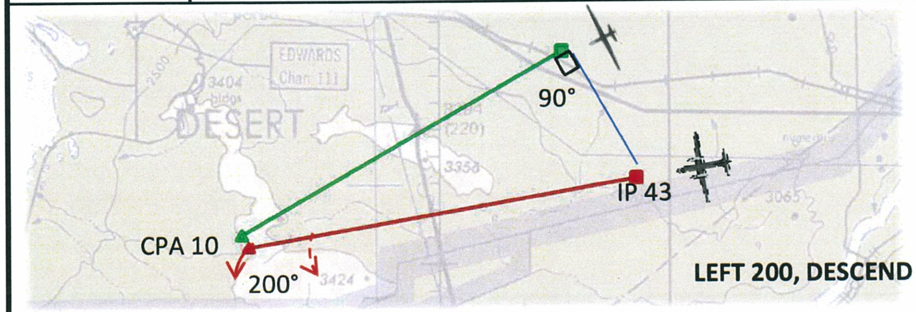
Tolerance (sec): ± 10

COMEX TIME: 0842

			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	**N34° 57.89'**	**W117° 24.47'**	16500	15.0	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	-1000	228		
CPA9	**N34° 51.11'**	**W117° 38.81'**	11500	0.0	**150**	
	N34° 51' 06.3"	**W117° 38' 48.7"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 126	Version 9
Card#	**L56G (90)**		Intruder 1

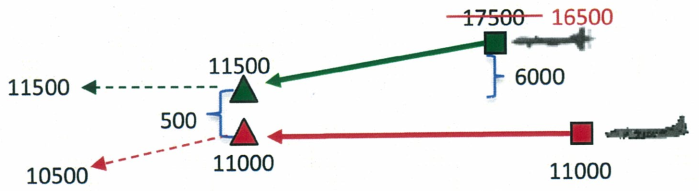


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
11000

ABORT PROCEDURE

10500	**180**



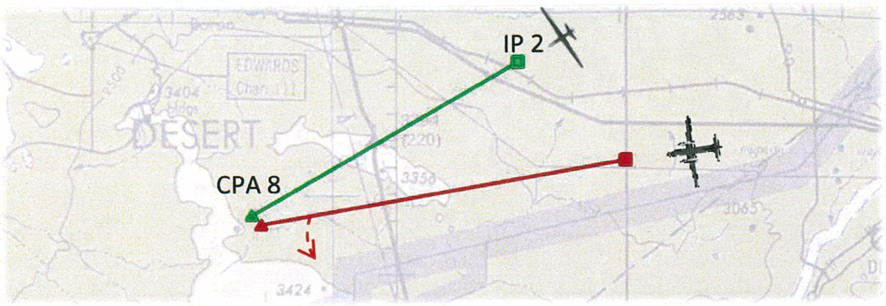
Tolerance (sec): ± 10

COMEX TIME:

			IP TIME ADJUST:			
PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP43	**N34° 53.17'**	**W117° 21.12'**	11000	16.0	**160**	
	N34° 53' 10.1"	**W117° 21' 07.4"**	0	248		
CPA10	**N34° 50.66'**	**W117° 38.50'**	11000	0.0	**160**	
	N34° 50' 39.3"	**W117° 38' 30.2"**	0	248		

NOTE: 6 min legs, 90° BEARING, Turn Left heading 200 at CPA to maintain 0.5nm separation. Descend.

FT-3, Configuration 1a	Aircraft: NASA 870	S/N: 120	Version 9
Card# 23	**L56G (110)**		Ownship



1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

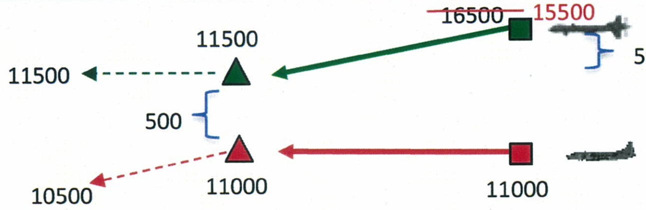
LOST LINK MISSION:
LL WPT 13

DECONFLICTION ALT:
12000

ABORT PROCEDURE

11500	**MAINTAIN HDG**

☐ AR 1 ☐ AR 2 ☐ Stratway+ ☑ CPDS
☐ OFF ☑ Advisory ☐ AUTO
☐ ADS-B ☑ RADAR ☐ TCAS ☑ TRACKER



Tolerance (sec): ± 10

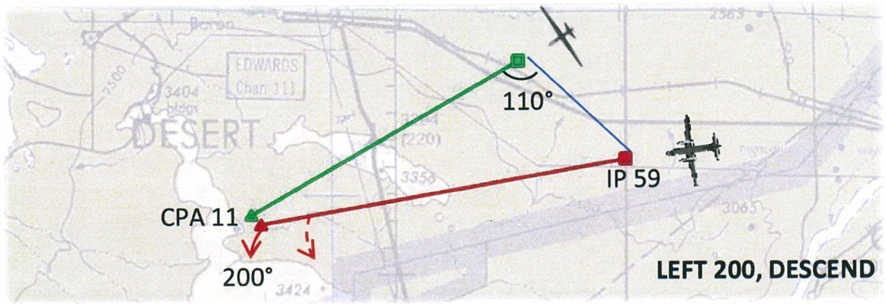
COMEX TIME: 0856

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP2	**N34° 57.89'**	**W117° 24.47'**	15500	12.5	**150**	
	N34° 57' 53.4"	**W117° 24' 28.2"**	-1000	228		
CPA8	**N34° 52.24'**	**W117° 36.42'**	11500	0.0	**150**	
	N34° 52' 14.1"	**W117° 36' 25.3"**	0	228		

NOTE: Ikhana fly-through/non-maneuvering.

FT-3, Configuration 1a	Aircraft: NASA 865	S/N: 120	Version 9
Card#	**L56G (110)**		Intruder 1

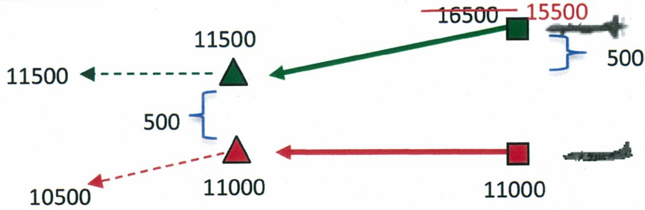


1. TC announces COMEX time.
2. Announce "<Callsign>, IP Inbound, altitude & special procedure review" crossing IP.
3. Aircraft on condition at least 3.5 minutes prior to CPA.
4. TC calls "terminate" when run complete.
5. TC announces next Card Number.

DECONFLICTION ALT:
11000

ABORT PROCEDURE

10500	**180**



Tolerance (sec): ± 10

COMEX TIME:

IP TIME ADJUST:

PT	LATITUDE	LONGITUDE	ALT V/V	DIST MC	G/S	TIME HACK
IP59	**N34° 54.25'**	**W117° 19.68'**	11000	15.0	**180**	
	N34° 54' 14.7"	**W117° 19' 40.6"**	0	248		
CPA11	**N34° 51.89'**	**W117° 35.97'**	11000	0.0	**180**	
	N34° 51' 53.3"	**W117° 35' 58.4"**	0	248		

NOTE: 5 min legs, 110° BEARING, Turn Left heading 200 at CPA to maintain 0.5nm separation. Descend.